

Audubon &
Shelby cos.
Dec. 12, 1912
Aug. 13 - Sep. 7, 1913.

From Iowa Official Register - 1909-10.

Harlan 1200

Kirkman 1232

Irwin 1266

Boona

Defiance 1275

Earling 1309

Panama 1251

Portsmouth 1200

Shelby 1304

Jennant

Elkhorn

Corley

Dunlap 1097

Persia 1167

From Iowa Official Register - 1914

This book is of no use to you, but I want it. If you find it I will be glad to give a reasonable reward if you will return it to me.

B. Shimek
Iowa City
Iowa.

Andubon and Shelby Co.

1912

Dec. 12, 1912 - Thurs

Left Des Moines at 4:30 A.M.

Train was about 1 hr. late

and I missed early connection

for Andubon at Atlantic.

Left Atlantic for Andubon at 8:45 A.M. cuts along way.

Low RR. cut just before reaching

depot at Locah. Seems to be

overgrown.

Just S. of road $1\frac{1}{2}$ miles above

Locah is a pitfall rather

deep cut. (This is in Andubon)

A mile further N. there seems

to be a bench.

Brayton looks fine for stopping

place. Has no livery, but there

is one at Exira.

Charted valley to Andubon.

Put up at Park Hotel. Found

county plat now in process

of correction and will wait.

Called on Mayor Spencer.

Went to hotel for dinner and
then met Rev. R. Smith, the
Baptist State Secretary for
Rural Churches.

He introduced me to the Co.
Supt., Miss

Mr. Cousins, a cousin of Bob &
a native of Cedar Co.; to

Mr. Van a banker; Mr.
son, the latter in

general merchandising, former
a banker; Dr. May, an
S. U. I. grad.; doctor S. G. of
park; druggist —

Mr. Smith was both
ordained and married here.

Before dinner I called on

Mr. Wm. J. Laubender, city
clerk, who promised to get
well-records.

In the afternoon I looked up

Mr. Henry Newman in charge
of well drill, and Mr. R. Locke,
his assistant. They represent the
J. P. Miller Artesian Well Co
Chicago.

Obtained from him the following
record:

Soil at top

At 33 ft. - 4 or 5 ft. of sand,

At 500 ft., 2 ft. of dark material,
like coals

Below 500 ft., to 1140, - shale.

From 1140 - 2000, - limestone
streaked with belts of shale
2-5 ft. wide.

The limestone is gray and
white mixed.

Water mostly at 1425 ft.

Then 50 ft. of green shale.

Then 55 ft. of gray sandstone
which they called St. Peter S.S.

Took samples of last at 10-15 ft. and
25-30 ft.

The well is located on the flat opposite the C.R. & P. depot.

There is a brickyard on flat near depot, - used to be in bluffs on opposite side.

Mr. O.H. Jacobson, representative from Audubon co., owns a brickyard near Kimballton.

Mr. Newman & his crew drilled the Dunlap well, = 1550 ft.

Left at 4:30 PM. for Atlantic. Met Dr. Machtrieb of Des Moines on train. He was formerly in Audubon.

1913

Aug. 13, 1913 - Wed,
Left Sioux City at 5:50 AM.
Missed connections at Maquoketa
and waited until 2:15 PM
for a freight train. This
took me to Manning
just in time to miss the
3:40 AM train on the C. & NW.
for Harlan, and I had
to wait until about 9:30
PM. for a belated C. & NW.
train.

Saw Miss Rogers at Manning.
Reached Harlan after 10
PM. & put up at the
Hotel Harlan.
Very hot, and quiet!!

Aug. 14, 1913 Thurs.

Spent day in looking up information about well-diggers, working up plate, etc.

Found that Will Shepherd was out of town but saw Ed. White.

Aug. 15, 1913 - Friday

Spent the day in work on township plate and in planning itinerary.

Aug. 16, 1913 Sat.

Drove north in the forenoon with Ed. White to the Baughman bridge and in sec. 8. (S.W. 1/4) - 79-38.

^{cut 1} Found a thick layer of bluish-gray loess, with many nodules, more or less in layers, and numerous iron tubules.

When dry it is quite hard. A few shells were scattered all through. Found:

Succinea arora

Followed up the river and found a sandy bank with an exposure showing what appears to be the following succession:

This is cut 2.

Loveland

Kansan

Aftonian

Nebraskan → a.

Much water comes from a.

Also found ^{modern} *Succinea arava*,
Goniatites minusculus and *Pifidaria*
armifera under leaves.

In the afternoon I walked out
along C. Gr. W. R.R. Southwest,
Noticed old cuts (3 & 4) at
depot, showing loess. Now
badly overgrown.

Cut 5 is first cut W. (SW) of
CR. D & P. depot, on C. Gr. W. R.R.

In the E. side of this cut,
toward S. end, is where a
mastodon (I think *Elephas*) tusk
and tooth were found.

Said to have been at base
of loess.

The cuts 3, 4 and 5 are
here greatly overgrown with
Melilotus alba, a good holder!

Down (S.) along the C. Gr. W. (now)
far from depot, are the
Swinehart cement works. They use
sand brought from the Platte ^{in the}.

Walked S. & S.E. to sec. 20-79-38.
Visited the birch grove on
Sorensen's place, - & found
birch and red elm dominant -
the former more common on upper
borders. This was formerly full
of hazel brush, etc., but now blue
grass has possession, and this place
makes finest pasture.

The grove in sec. 20 are
partly cleared.

In the grove were:

<i>Ulmus fulva</i>	<i>Ribes gracile</i>
<i>Quercus macrocarpa</i>	<i>Cornus paniculata</i>
<i>Symphoricarpos occidentalis</i>	<i>Celtis v. crumifolia</i>
<i>Xanthoxylum americanum</i>	<i>Crataegus mollis</i>
<i>Triostema perfoliatum</i>	<i>Phlox glabra</i> (border)

Prunus americana
Callalpa (a row) - planted
row Elder - introduced?

In the E. 40 The red elm is dominant.

This grove is on an abrupt
N. slope.

highest part of ridge

grove

On the bottomlands along the Rich-
man bridge I noticed:

Soft Maple	Red elm
Box Elder	Vitis -
Ulmus americana	Black Walnut
Green ash	Prunus americana
Elderberry	

Saw five planted larches in
S. part of Harlan S. of C. & N.
W. RR.

The mastodon[?] tusk was found
just about opposite 1st telegraph
pole N. of S. end of E. side of cut 5

Aug. 17, 1913 Sun.
(from Harlan)
Drove towards Defiance with
Ed White.

at NW. $\frac{1}{4}$ $\frac{1}{4}$ of 8-79-38, along
road is a ^{cut} in loess.

^{cut 6} This exposure faces S., and is 5-
7 ft. deep, and only lower 2 or 3
ft. are clear, - rest overgrown.
The lower part shows distinct
gray loess, iron tubules more
abundant; saw no fossils.

The upper part (greater part)
shows a yellow loess, rather
heavy, with bluish streaks.
No nodules or fossils.

Took sample of gray loess from
near base of slope, and of
yellow loess $\frac{1}{2}$ way up, and in
each case about 7 ft. below
top of bank.

^{cut 7} On N. slope, at corner, another
similar section shows gray loess

at base, yellow above.

X. Three smaller cuts in yellow loess appear ^{marked on maps} along road north.

This part, to below middle of sec. 8 is rough. Farther north the slopes towards river become less abrupt and the road runs along flat.

Near Harlan we passed a big (garden) patch of *Amaranthus retrofractus*.

Vernonia is very bad in pasture near bridge.

Cut 8. In NW. $\frac{1}{4}$ SW. $\frac{1}{4}$ 29-80-38 a cut on slope facing N (not more than 3-5 ft. deep) shows Kansan drift in lower half, a ferretto zone, with a sort of chocolate layer above, and on this a gray loess with nodules. (See samples.)

The Kansan is of the gray modified type (see sample.) the ferretto is clayey.

The layer above (a foot or two)

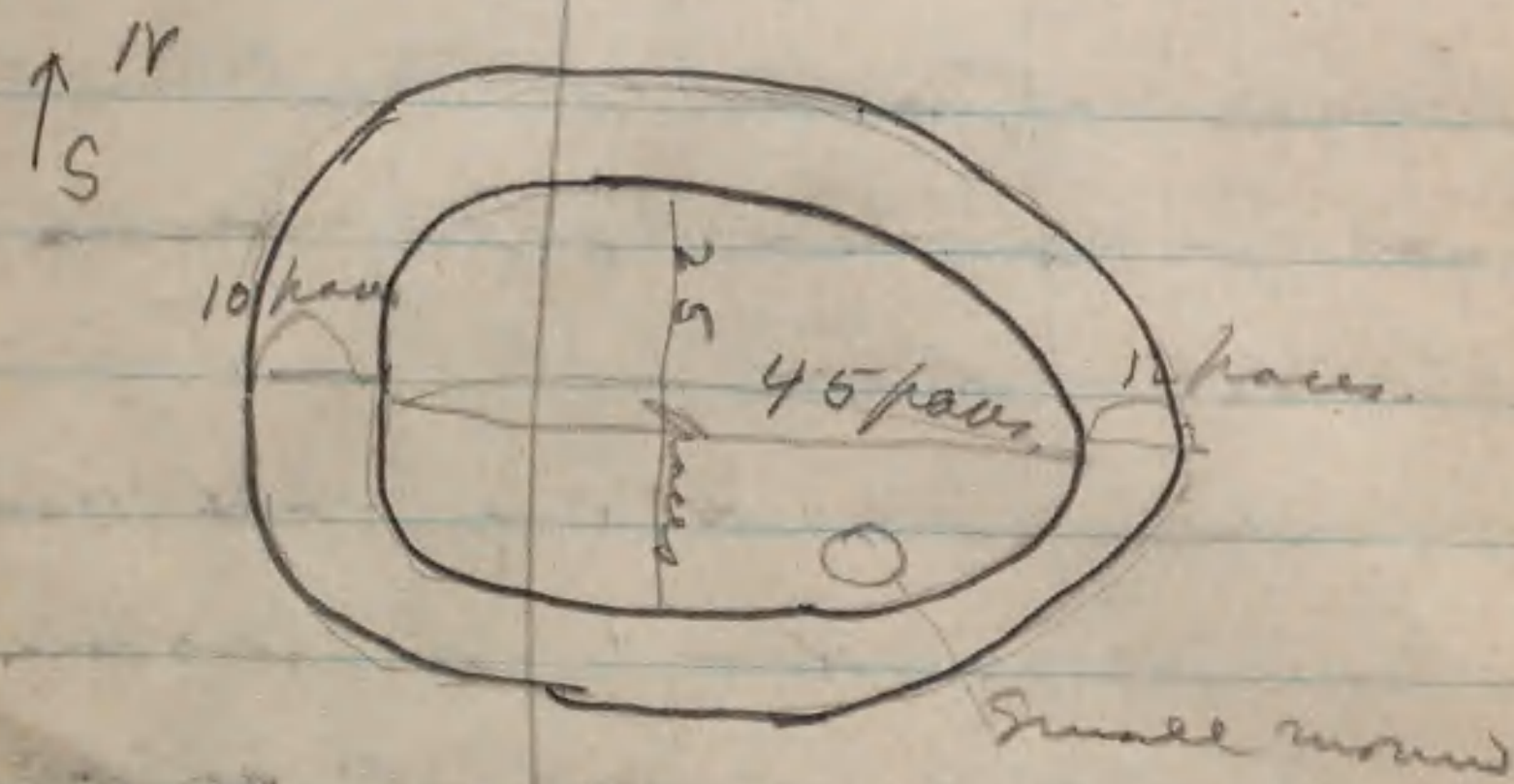
is laminated, with darker strata interbedded, and grades up into what looks almost like a gray loess.

Near top of hill, and on top, is a layer of yellow loess (not thick, - possibly only 4 or 5 feet) which at top shows small nodules, which are not very abundant.

Cut 9. In NW. $\frac{1}{4}$ of sec. 29 there is a steep hill facing N., with cut. Yellow loess shows on top of hill.

Cut 10. The steep hill just N. of Pickard's, in SW. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 20-80-38, shows calcareous Kansan (light blue) for nearly $\frac{2}{3}$ of the way up. Above it is an indefinite (lumpy) reddish layer, and above that yellow loess. Did not see blue (gray) loess, did not search much. Looked at the two mounds in

N. part of sec. 17, - near bridge.
The east mound is larger.
It is very flat on top and
sloped so;



It is somewhat lower towards E. side.
Elevation about 10 ft. at E. end
and over 12 at west end.

This mound is right on
flat.

The other mound, west of
ditch, is narrower at top,
not flat, and overgrown, - some
trees.

There is a sort of terrace
in the big bend of river just S.,

on E. side of river, higher towards W,
probably 20-30 ft above lower
bottom. Are the mounds just a
part of this terrace cut off?

In sec. ⁸⁰⁻³⁴ 8 there is a sort of
irregular terrace.

The hills here all have
yellow loess.

Cut 11 - On S. slope of last hill
in E. side of sec. 7, I could see
gray loess near base of slope,
and more yellow loess on top.

Cut 12 - Cut on N. slope also shows
gray loess below, with nodules.

Cut 13 - At center of S. side of sec.
6-80-38, on hill facing N.,
yellow loess appears on top, with
very many small nodules. The
greater part of the slope, almost
to base, shows blue loess with
many iron tubes. Occasional
signs of a ferretto(?) appear, but

no Kansan is in sight.

Near Sec. 4, T. 23-81-39,
along road which runs along
northern slope, well below top
of ridge, gravel and boulders
indicate Kansan.

(Copeland at Manila is well digged.
A little ridge on sec. 23,
on James White's farm, is almost
barren.

It is yellow or reddish stuff,
Loveland? (see sample)

Examined the big cut E. of
White's and saw many fossils.
Will return to this
section.

X Yellow loess also appeared on
S. side Sec. 4-30-81-38,
(see map.)

Monday, Aug. 18, 1913

Wrote up notes. At 7:15 AM.
went to Redfield's grove north
of Harlan with Shepley, in his
new car.

Worked the plants chiefly. Found
that stumps of the Pignut were
favorite habitats of fungi and
mosses. Found a bur oak
stump over 3½ ft. in diam. &
covered with lichens. (See spec.)
Collected a few land shells, and
on an old rotten log (probably
basswood) I found fungi & slime-
molds.

The red elm & bur oak are
more common on the upland
border, & the Am. elm, pignut,
hackberry and basswood are
quite common. The pignut is
very common & scarred by borers.
Returned at noon. Rained and

I could not get out again until nearly 4 P.M. Went to Bangh's grove (at Brickyard) and collected plants in the woods, and also in the scraggy boggy places on banks.

Also picked up a few land shells. Was out with Ed White.

Also recorded weeds in a cornfield & along the roadside.

Returned in time for supper, & in evening arranged & pressed a package of plants, & prepared them for shipment.

Went to bed after midnight.

Aug. 19, 1913 - Tues.

A hot, quiet morning.

Sent out press of plants & then

at 9 A.M. drove S.E. with Ed White - ^{In sec. 17-79-38 - a cut 2-3 ft deep shows yellow loess. Marked on map}

Old reading at CR 8 & P-1124

Set it at 1200

^{cut 14} On gingery hill, - on slope facing W. there is a long cut, partly overgrown, 5-7 ft deep, yellow loess. All around the country is very rolling.

^(see notes of Aug. 24)
^{cut 15} Near N.E. cor. of sec. 20 there is a long hill, with 5-10 ft. cut. This shows yellow nodular loess above, probably 6-7 ft. (estimated) - then blue loess with strongly oxidized band which runs under upper limit of blue loess. The blue loess has many tubules & some rounded nodules, but I found no fossils. The blue loess appears in lower 1/4 of slope,

+ runs nearly parallel to slope,
dipping in above, and is probably
not over 5 or 6 ft deep. Though
this was not determined as a result
of shovels.

There was sand (evidently under
loam) about 1/2 way up hill &
this was about a level of old
sand pit west.

Near base of slope the
chondritic, tabular layers appear,
about 2 ft. thick, & below
it is calcareous, light blue
Kansan. Some pebbles &
small boulders.

The top of hill = 1334, base = 1250.

Cut 16 Next hill E = 1315 - top & cut on slope
(Aug. 24) Kansan drift, gray belt, yellow loess.

Cut 17 - (Aug. 24) (X) Yellow loess with fossils; blue mud below; 6-7 ft. of yellow loess.

Cut 18 The next hill, near middle
of run shows Kansan at base,
a gravelly & I noticed
only yellow loess above.
Top of hill = 1330.

This is a slope facing N. On the
slope (S. of road) is a grove of
small cottonwoods, all leaning
E. The valley runs W. &
wind catches them there.
(this is Chas. Davis -
Parkerhurst)

grove valley S

(only a bit of yellow loess showing
marked on map)
Another hill has almost no cut
and then the last hill in sec.

Cut 19 facing E. shows yellow loess in a
drift at base, blue mud? below yellow loess. (see sample).
at 4-5 ft. deep.

A small cut at corner (Aug. 24) shows blue & yellow loess. Marked on map.

Photos 5 & 6 show modern school
at N.W. cor of sec. 15.

Cut 20 - N.W. line of town S. of Elmer.
Kansan shows much of the way
up the hill (facing E.) yellow loess
on top.

Took a series of photos
at Whites. Alfalfa & Aberdeen Angus
cattle.

Cut 20, (Aug. 24) Overgrown cut, shows gray streak in road, yellow along
cut faces W.
" 21 - (Aug. 24) Faces E. Similar to last.
" 22 - (" 24) Shows blue loess at base, yellow above.

cut 24.

S. of the 2nd sec. corner W. of White's house along road there is a low bank - 2-4 ft - shows gray loess with iron tubes, nodules, and a few fossils.

This is not high, its about 1306 at base.

This blue loess runs along for some distance & lower down the bluish "chocolate" & rather a red hardpan (ferretto) shows & below it typical light Kansan.

On N. side of sec. 36, (nr 4) there is a small hill with Kansan exposure.

Mr. White's No. 40 A. alfalfa field is 5 yrs. old & the one pastured (30 A.) is 12 yrs. old.

He is pasturing this 30 A. lot it grows up well so that young

indigestible stuff is not eaten rapidly, & has turned 100 head of Aberdeen Angus cattle. He says it works fine. Had been on 3 weeks & a crop 2 tons to A. had been cut.

The 40 A. tract had been cut twice, 5 tons to A. & the 3rd was beginning to blossom.

cut 25 - Just E. of school house on N. line of 36 the hill shows Kansan away up. There is very little loess. The bluffs along this part are rather steep & high on E. side & show grooves well up in pockets along N. side of sec. 36, at about middle, Kansan shows at base of bluff - limey - with boulders - grows in barnyard & on road at foot of hill. Marked on plan.

cut 26 On slope up from Bartlett cr. (face N) Kansan shows well up. Yellow loess on top.

Cut 27

Exposure S. of section line (true mile line)
shows blue loess almost to top, on
small slope facing S. - 3-6 ft.
v iron band $\frac{1}{2}$ way up or more,
v then indistinct yellow(?)

Cut 28

A small hill next south is
very similar.

Cut 29

The next hill is higher - 1350
v its slope shows gray loess - with
some yellow above.

On return CR & P defect
= 1255

(Cut 40)

On N. side NE $\frac{1}{4}$ sec. 27-78-38 - a cut shows yellow
loess. Faces E. (See notes 7, 8 (24) - Gray loess)

Kansan shows along road on N.
side NE $\frac{1}{4}$ sec. 8-78-38. - on both
sides of the deep gully.

Top of hill on N. side NW $\frac{1}{4}$ sec. 4-78-38
= 1335; river bottoms N. of

low ridge N. of SW corner 5-78-38.

Cut 30

Cut on slope facing E. near NE cor. of
NE $\frac{1}{4}$ NW $\frac{1}{4}$ - 8-78-38 shows yellow
loess at top.

Aug. 20 - 1913 - Wed.

Rained in morning. Packer
basket of material, water up
notes and plates, and expected
to leave for Corn Rapids
at 6:30 PM. but a week
with C. Gr. W. at Kirlman
blocked me. Expected to
go to Cornhill Bluff then, but
even that was not possible
as there was no definite
assurance given that I
could get down.

Went to College Heights at 5 PM
from Heights 40 ft. higher
than front of bridge.

29 1/2
1 1/2
31

Aug. 21, 1913 Thurs.

Left Harlan at 6:45 am.
by automobile (\$3.75) for
Portsmouth. All the region
between is rolling Kansan
(medium) with loess
everywhere visible. (See location
of larger cuts.)

Arrived at Coon Rapids
at 10 am.

There is a long boulder
cut east of mine. Its
East part shows a
horizontal layer of blue
sand & layers of sand -
at one point - 10" hole by the
face of - 3' of blue sand
3' of sand
2' of blue sand

Continue the sand layer -
about 2 1/2 ft thick - on top
of rubble below about 2 ft
sand has rimy layer

High Rain & Ground
Water E. of 7th Street
ground lower than up 7th
also under 5 feet

(See next page
for west part
of cut.)

101

Angle - any length 11-14 miles apart
at 10 1/2"

Leaves

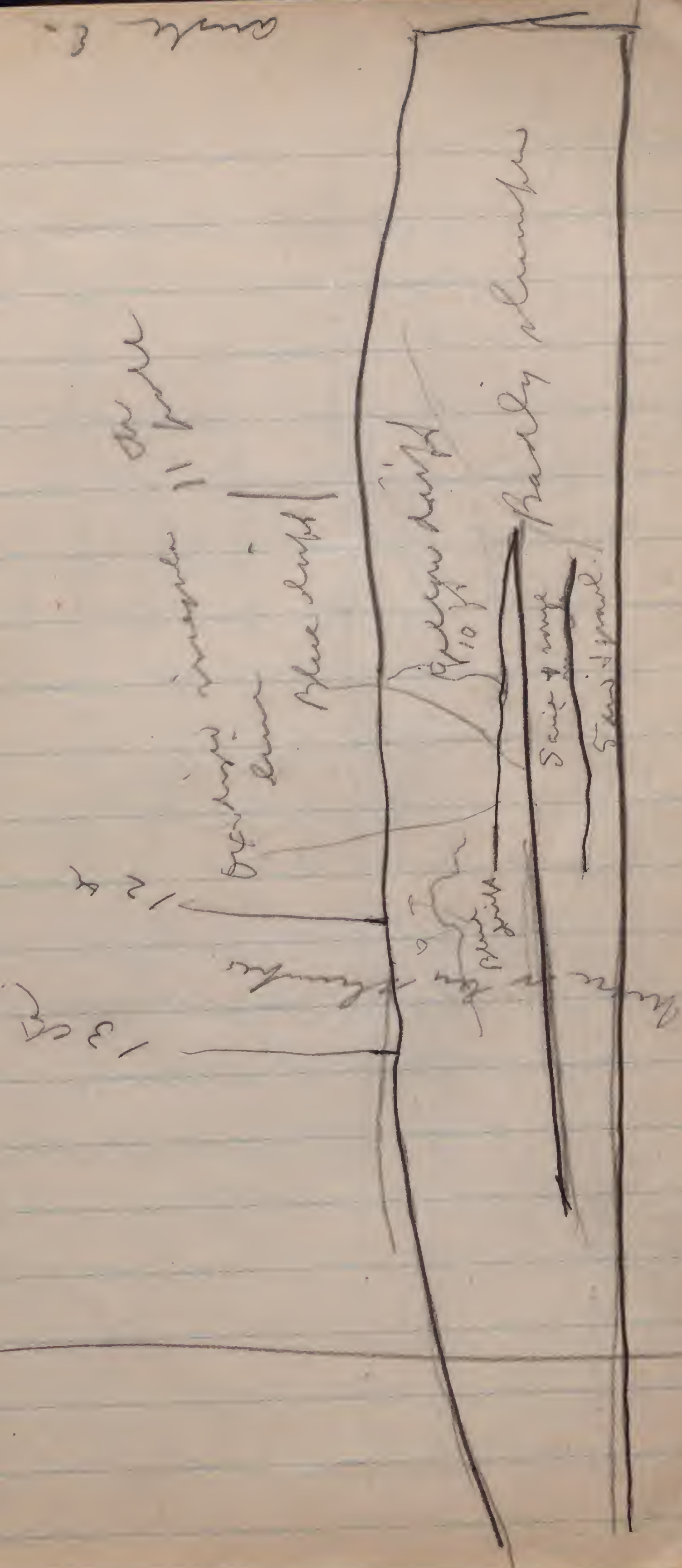
At the angle there is
 more much. The sand &
 much are not ^{uniformly} definite
 quantities, but the two together
 make distinct layers.

The east cut runs to
 about 17 poles & drops
 to a cut of 5 or 6 ft &
 then the second cut follows.

^{2nd cut} Between 17 & 23 the cut
 is low - 6-7 ft.

Between 22 & 23 it
 appears as follows:
 (see summary below)

West part of cut (see 2nd block)



11.5.58 1374

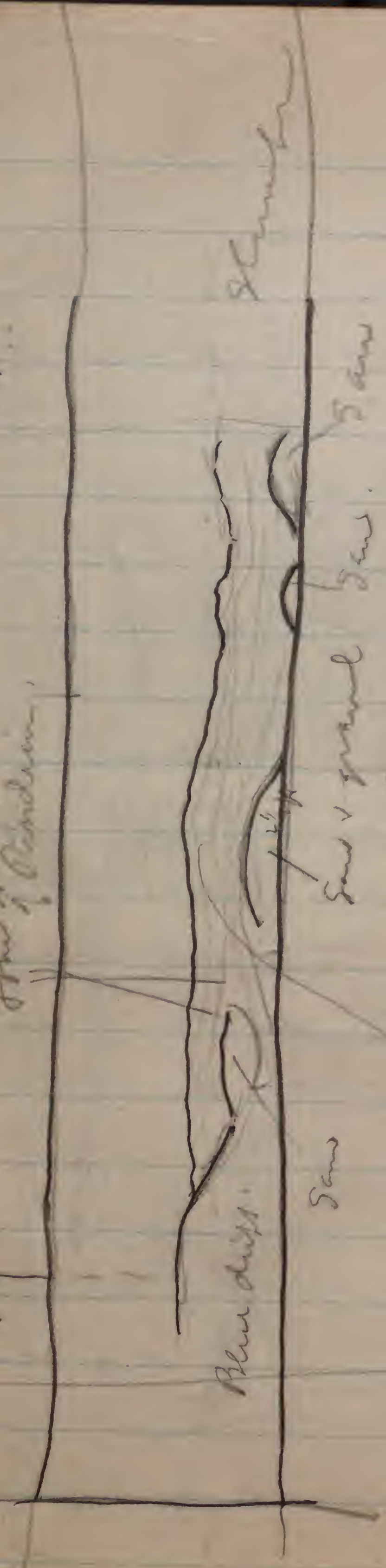
CR. 0.1

with attention

21

21

Two pieces of limestone



gray limestone, now in layers folded, with fine
 sand layers between small layers

West end

This line is

1251 sample
 (see sample 1251)

28 to 29
 of lower end
 of the
 1st sample

28

upward drift
 10-15 ft

oxidized sand

32

6-7 ft
 blue drift

1219

blue drift
 (see sample)

sampled
 with much

11.5.11 1374 CR. 9.11.11 with attention

In the afternoon went to river
with John Weaver & picked up some
Union, *Phacium*, *Calymene*,
Amplexus, etc.

Then went to the Williams
gravel pit, now worked for 5 yrs.

or more. It is located on a
second terrace, & shows a mixture
mass of cross-bedded sand,
gravel & a little silt -

The sand has black streaks
(*MnO₂*) Coarser material
is mostly at top. There is

almost no *desoxy*, ^(soil etc) or thin.

In one place I found what
appeared to be a fragment of
a thin shell (like *Cardium*), whole
of *Tricardium* or something,
of the kind.

Top of gravel 1203

Bottom of pit 1213

River, below dam 1190

The lower bottom ^{land} is only
5 to 10 ft. above ^{the river} river.

The cuts westward along C. M. & S. P. Ry.
were then taken up and numbered
consecutively, ^{as follows:} this is cut 1.

The cut in N.E. cor. of sec 33
is about 15 ft deep & is all
sand, with an irregular bed
of small gravel & soil above
this part above sand being
1-3 ft deep.

^{this is cut 2,}
The first cut beyond road.
It shows yellow loam on
surface, & this on Kansan drift.

^{this is cut 3,}
The next cut shows layers of
cherty stuff on S side;
about 2 ft of yellow
stuff (loam); then 5 or 6
ft. of yellow loam with
cherty streaks.

This had many fossils
& also nodules. It is
cut 3 of Tomlinson's notes.

Cut 4 further on across
drift.

Walked back by wagon road
to Weaver's house. Noticed
on the way that loam forms only
a little cap, and that drift
shows on all the ridges far
up the slope.

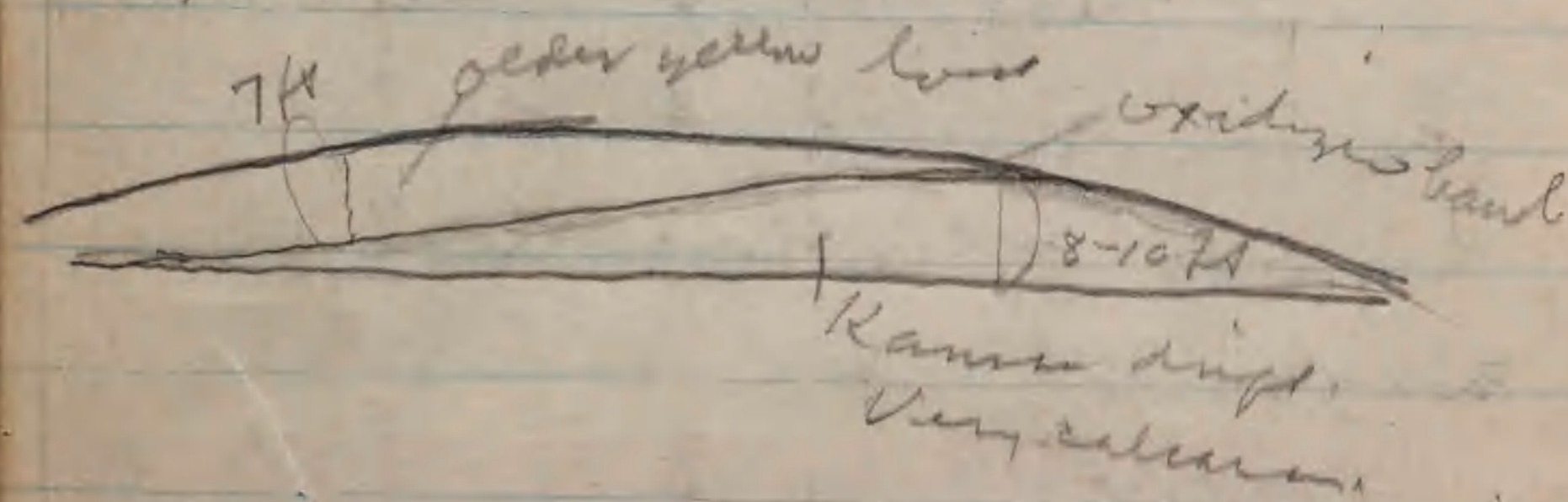
Had supper at Weaver's and
then returned to the hotel,
found Prof. Macbide and
conferred with him, chiefly
on drift.

Aug. 22, 1913 - Fri.
Left ^{Com Rapids} at 6 am for
Deadham,

Elevation of depot at
Com Rapids = 1115

First cut out is the
sandy cut,

The 2nd cut shows
S. side.



The N. side is similar, but

Kansan ^{drift} = 15 ft.

oxidized ferrite is bluish

and loess about five feet.
The ferrite has small boulders in upper
7 and no fossils here.

At 3rd cut RR = 1128

and top of E-section =

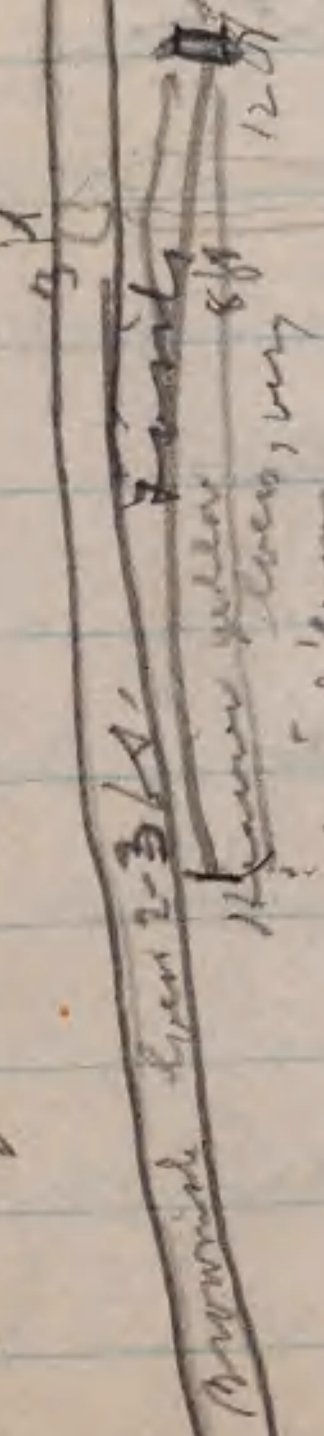
1148. On return 1120

and 1141, respectively.

East section of cut 3. W. of Com Rapids.

S. side.
The fossils were on E. slope of a ravine.

70 paces.



Thin and begins 75 yds. E. of sec. 28, Union Twp & extends
N. of west. It is double, a sort of sag dividing it into
two parts. The loess is especially fossiliferous in the upper
part, just under the brown layer, about within 1/3 of loess
proper.

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proper.

The fossils on the S.
side seem to be
restricted to strip
or belt beginning 25
yds W. of section line
& running for 35 yds.
Both W. & E. of this there
seem to be no fossils.

The fossiliferous belt
on N. side is higher
(about 18 ft), steeper
(app. W. side) & the
whole appears as if
the lower part of the
slope had been
better inhabited by snails.
The slope of ridge
is to much.

At 9 o'clock - reading on
N. side at the
fossilif. part:

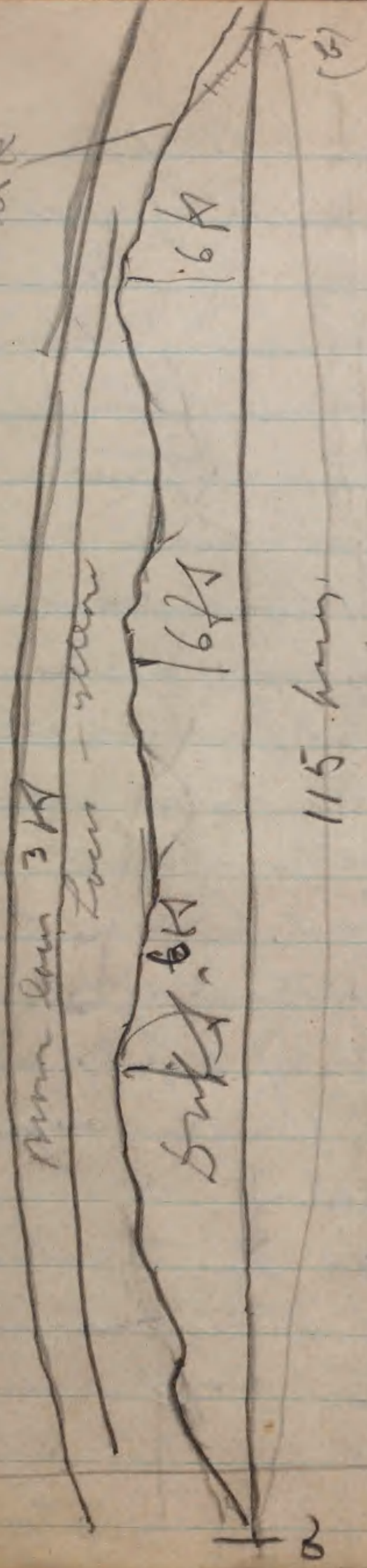
Base 1100
top of fossil. in 1117

Top of Band 1121.

Took sample of rather
brown loam from S. side
Loam, soft, no fossils.
The loam is heavy yellow,
with bluish streaks &
mottling, & some round
nodules (took samples
yesterday). It is
very fossiliferous in upper
1/2 & grades down into heavier
non-fossiliferous stuff of
same kind, below which
is chocolate loam & ferruginous.
The N. side of E. part is
less clear, mostly overgrown,
& overgrown.

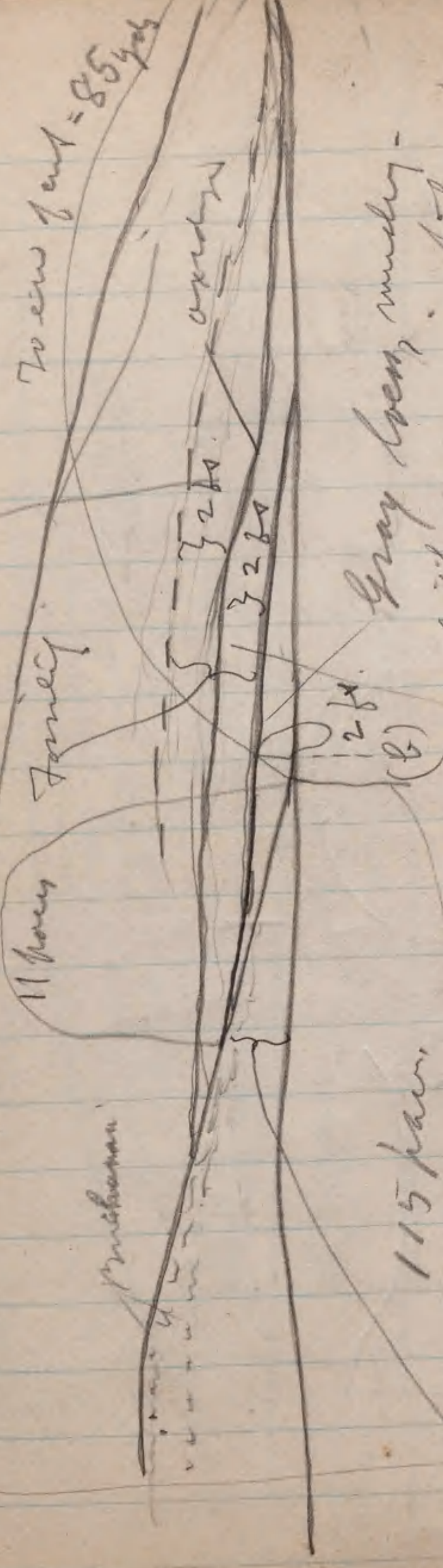
The N. side does not show
so distinct a division into
2 parts, the rock running
out.

W. side, S. side, cut 3.



Broken gravel stones, following old surface, with two lines of boulders (small)

Part of cut 3 (see above) Family river cut



River 2 ft. above base of cut. cut is here 65 ft. wide

W. side at Fork only
The side of river from blue mudstone on S. side

Gray loam, muddy - with many iron tubes - fossils yellow, with iron tubes, cladding & bands & fossils. The (sub) yellow band, is divided in two by an oxidation belt 3-4 in wide - fossils often seen beneath.

The blue & yellow "muds"
are not sharply defined
except in places by color.
This was evidently a
bog in a ditch hollow
sloping S.

Left cut 3 at 11¹⁵ am
Barometer = 1100.

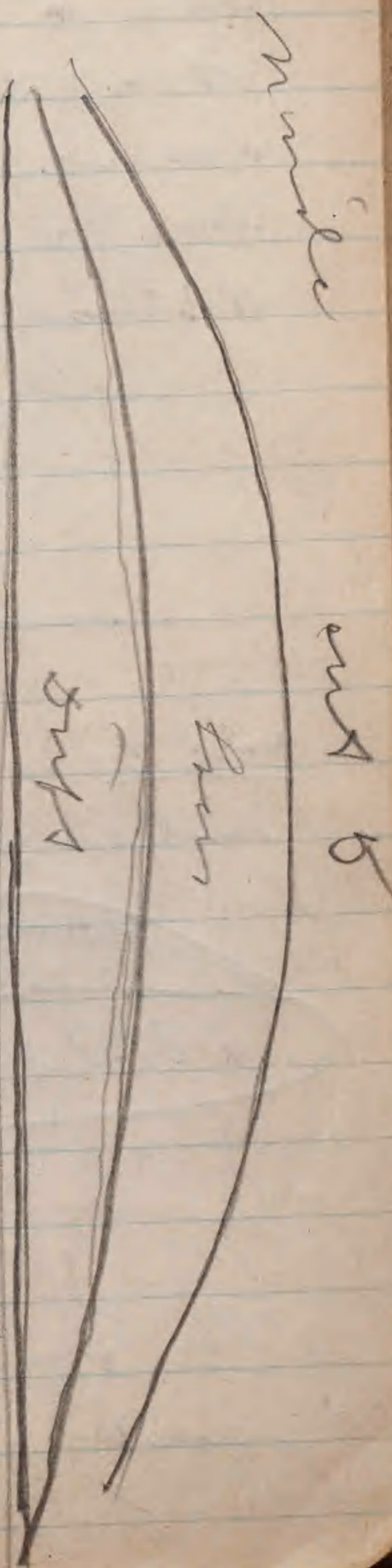
Cut 4 is mostly chiefly on
N. side + shows practically
only drift.

Cut 5 - shows 7 ft of
drift & 8 ft of yellow loam
(upper 2 ft brownish) - on N.
side. S. side 3 ft. drift,
6 ft. loam.

The N. side near center
shows a lot of fossils &
moulds. This is the
same heavy yellow
loam as before (see shells)

Here again is dominant

A characteristic brown silty drift (1 ft?)
is visible? Shows brown & gray
loam strata with red silty material.
End is 150 yds long.
Drift is very distinct & shows
brown in brown loam.

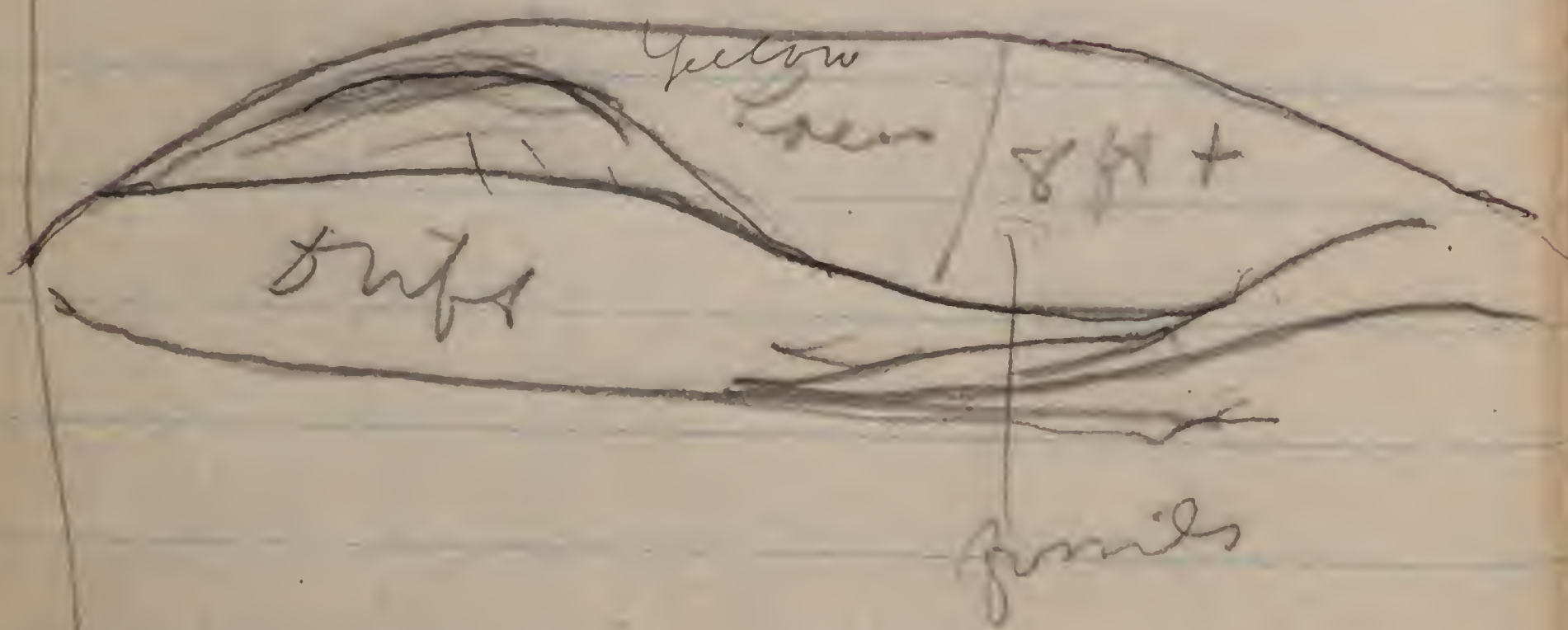


Cut 6 begins on $\frac{1}{2}$ mi.
line & is 150 yd long.
It is about 15 ft deep
& shows drift almost to
top; a veneer of loam, 1-2
ft. thick, showing eastward

N. side cut 6



cut 7 is chiefly on the
side.



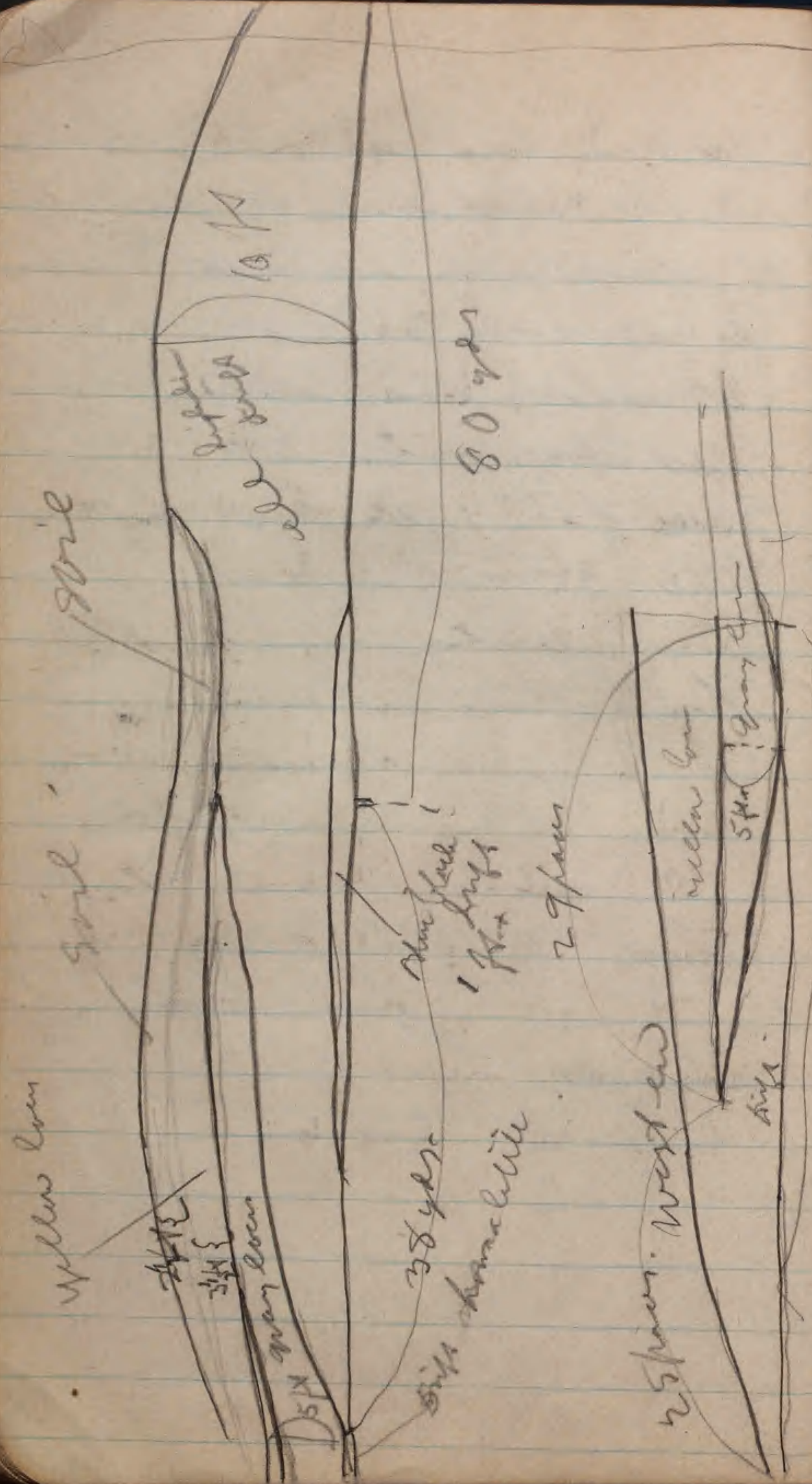
The loam is yellow &
fossils are found in
that lower part.

Cut 8 is just W. of bridge (+ road)
On the N. side it is over 20
ft. deep, & shows drift to top.
Its lower 3 to 6 ft., or more, is
an impure mass of blue blue
joint clay (see sample)
Since of this slumber, as if
there were sand under it.
It is rocky.
The N. side is lower

March 1 374

CR. 9.1.1

with attention



The gray loam rests on Kaman,
a conglomerate line of boulders
& pebbles much thin, & the boulders
project into loam.

It contains ^{a good many} nodules & a
good many tubes. Fossils
are scattered all through, but they
are more abundant below.

The yellow loam is separated
by a sharp line, & there
is an oxidized band 6-8 in
wide in lower part of yellow loam.
It is yellow, with dark spots,
loose; no fossils or nodules.

The gray loam is beautifully
wind laminated.

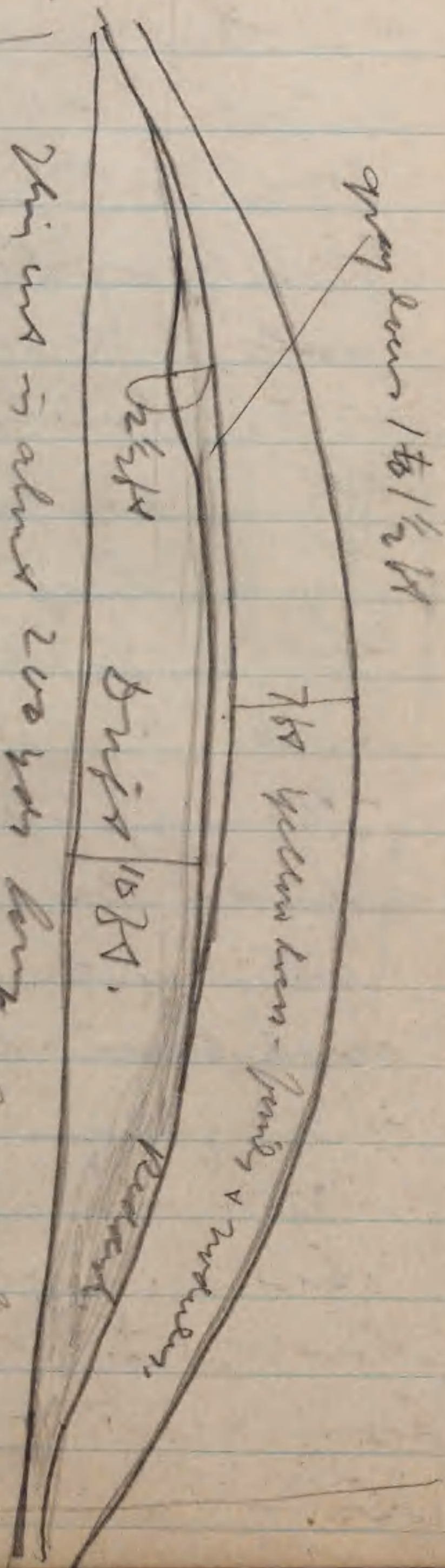
(See fossils & samples.)

11.5.18 1374

CR. 0.1.1. 2.2.2.

with attention.

This is about 200 yds long
The yellow loam is of the heavy type
& contains many nodules & shells
scattered all through. On 10. mile cut in
this is cut on E. side
lower, but shows drift, yellow loam, & at the
end a bed of gray loam.



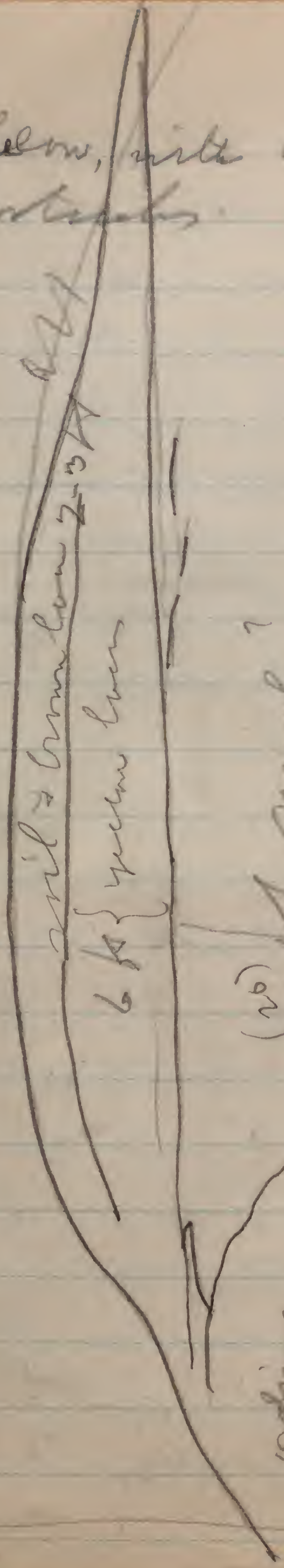
only drift and about
a foot of top soil, ^{on E. side.} +
Cut 11- also shows on E. side
only, & is like 10.
It is located ^{at a point} just below new
RR tracks to west of old.

Cut 12 is a $\frac{1}{4}$ mi E. of road
& is about all on W. side
The lower part is a heavy
joint clay with few
pebbles. - Eastward it
shows calcareous bedding
in usual Kansan fashion
(works much like western)
The line above is nearly
horizontal & somewhat
laminated. Then comes
loam which is quite

cut 12 - W. side

gray below, with many iron streaks.

red & brown 2-3 ft
6 ft yellow brown

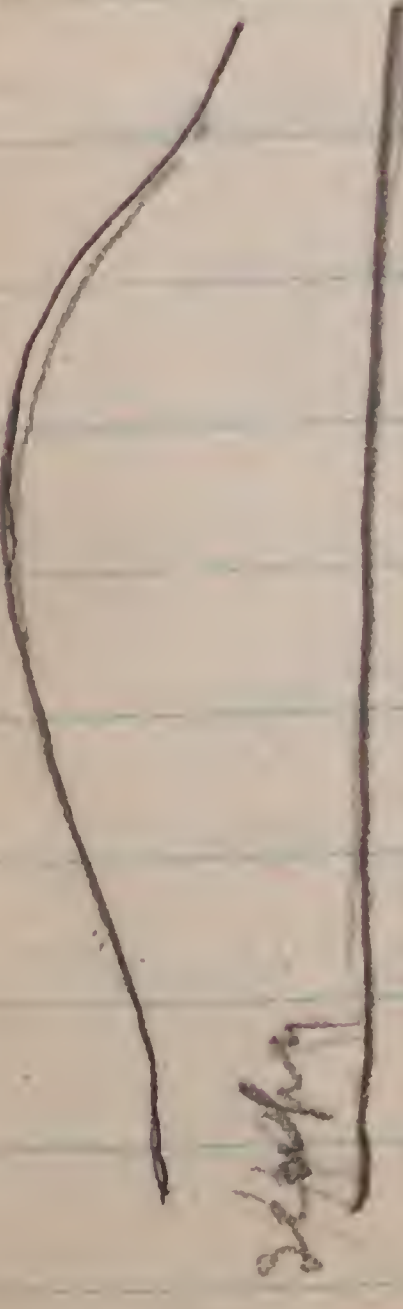


(20) 18 ft mud?

Fossils are scattered about. But many.

cut 13

Is small & on west side.



Forins 8/2.

It shows no lower life.

but appears muddy (like 12). It is

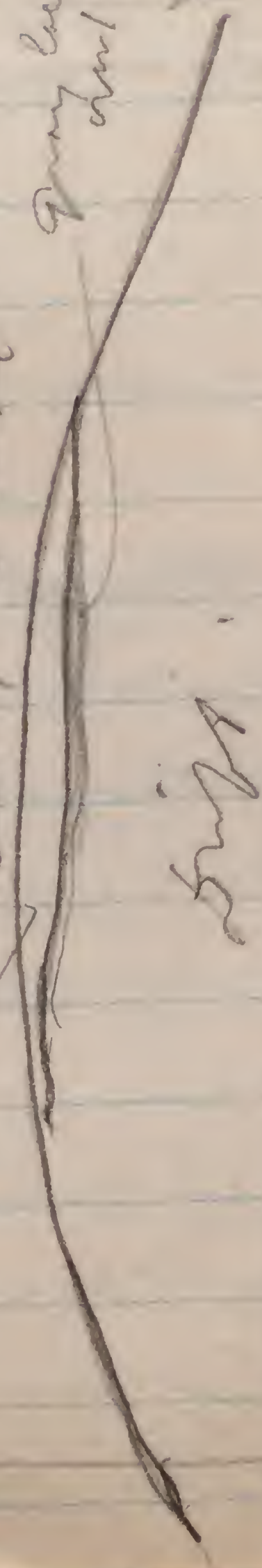
not quite as high as 12.

Even now 5-6 ft.

cut 14 - W. side

very large
cut 15

almost 1/2
no 1/2 in size

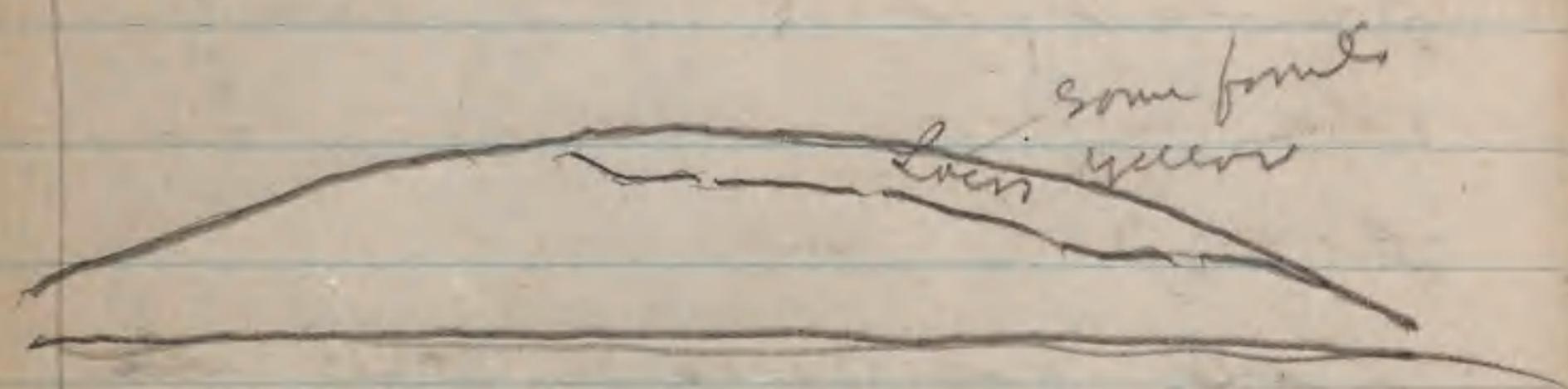


The 2. side is similar, but lower, & shows 4-5 ft of yellow brown with a few shells (Pecten, etc) & nodules. Did not collect here.

11.5.58 1374 CR. 9.1.1. 226 with attention

Cut 15 is unfinished,
just making an it.

Cut 14 - E. side



On both sides of 14 nodules
are abundant near top (small.)

The layer of gray loess
on W side is irregular,
but over a foot thick
in thickest place. It
has many iron tubules.

Top of cut 14 W side 1267

Base ————— 1239

Shows few fossils from
cut 14, W. side

There are low scrub bur oak
on hill above cut 14.

Cut 15 is too fresh & not
finished, but it seems to
be loamy above, & shows
drift below.

Loam is scant all along
here.

Cut 16 - on E. side (better)
& shows only drift

Cut 17 is also only in
drift - E. & W.

Then comes long fire & wagon
road.

Quite a bit of hard
scrub timber west of D.

Cut 18 is W. of road,
about 25 ft deep &
(going down). Upper 9 ft
is: - 2-3 ft soil

6-7 ft. heavy yellow
finely. loess with
nodules. Took small set.
This is chiefly on E. side (W. side)

Cut 19 is a great cut on
RR. line. It is nearly
all overgrown, but shows
that most of it is drift &
there is only a thin bank of
loess on S. side. This will be shown.
Cut 20 is new cut just after
RR again leaves old line.

Cut 18 - N. side

Brown 2-3 ft

yellow loess nodules

6-7 ft.

Stiff 12 ft or more.

This is a big cut just W. of road.

11/18/13 37 ft

CR. 1.1. 1.1. 1.1.

with attention

~~under~~
~~aug 29~~

at turn, on N. line of
32-81-37 There is a bank,
on N. & W. side of road, which
shows 8 ft of yellow loam.
It is rather soft, but of
the older type with bluish
streaks & mottling, & has
some nodules (medium or small)
(see samples) & shells, are
scattered through, showing
in lower 5 ft. See shells
& samples.

Reading at base of this cut = 1345
At base of long slope west } 1265
on bottom } 80

This shows drift distinctly
at base.

The Kansan is light blue
& yellow & has ^{rather} small nodules
& pebbles, some 500 lb, some
black.

C. & W. at Durin 1249

(Aug 29)

C. & W. = 1256

C. & W. = about same as 1249

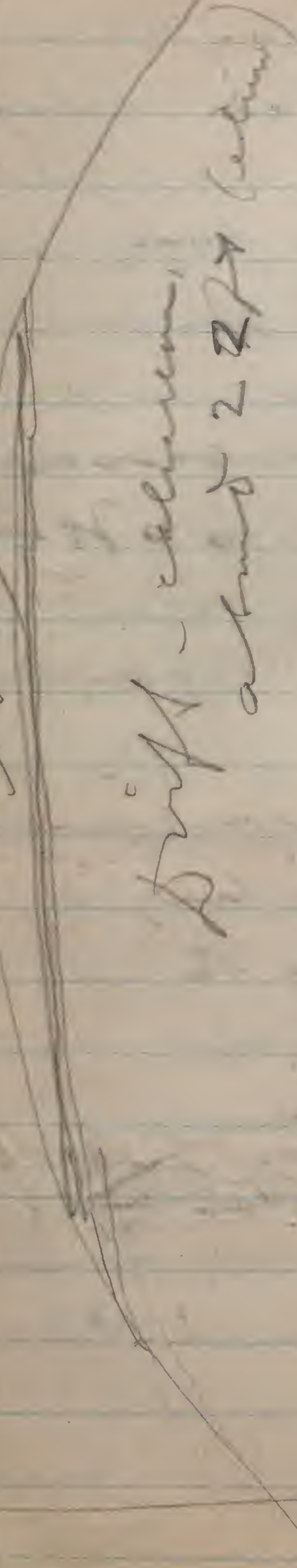
Went to Highland Grove, San.
Felin many on upland -

1375

CR 1.0

mid elevation

cut 20 - 81 m. side
 yellow loam
 1-2 ft (estimated)
 15-18 ft



Drift - calcareous
 about 22 ft (estimated)

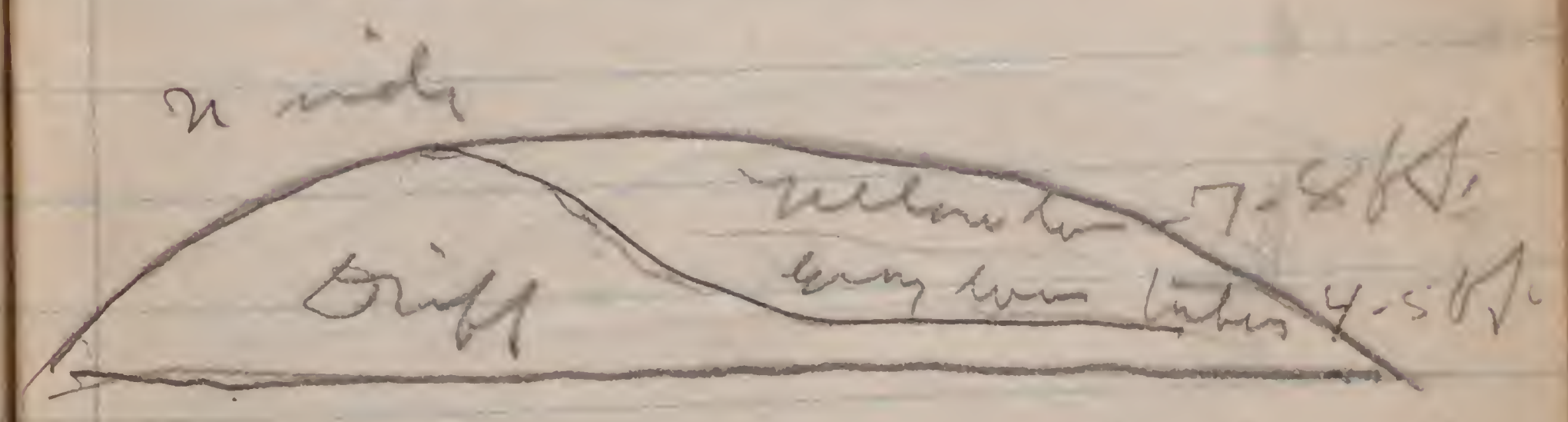
The N. side steep & shows only
 drift. The N. side is rounded

Aug. 22
 from hill
 m

Barometer water S. side of
 cut 20 46 ft. $\frac{1318}{1272}$
 46

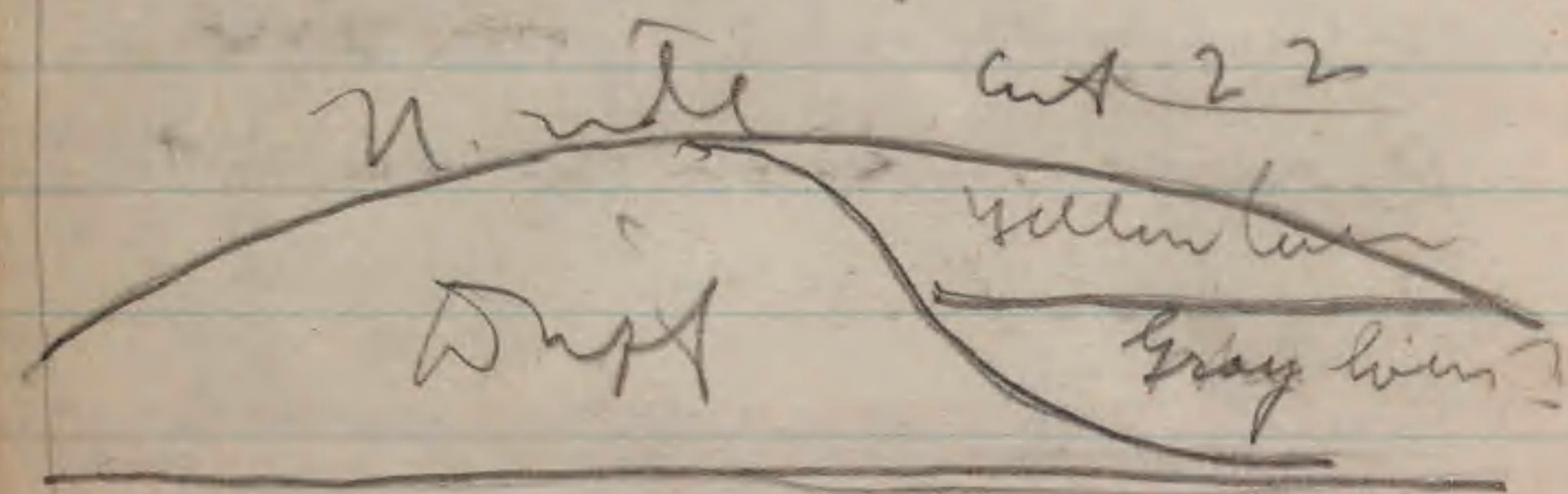
The yellow loam (+ sand) is 8 ft
 thick, & has a few fragments
 of *Stuccina* in it.
 Also small nodules above.
 The gray loam is 3 ft thick
 & has many small iron tubes
 & some fossils (see small set)

Cut 21 really good
 20 - It is high 5,
 much lower N.

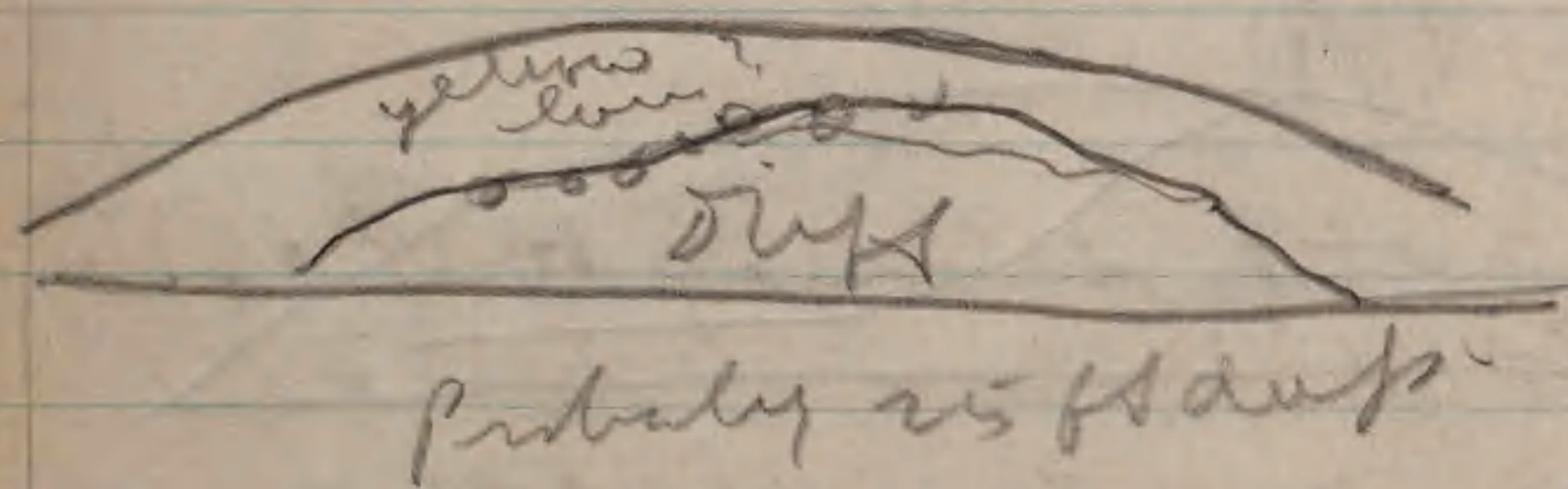


S. side shows much drift,
 & some loam on top.

Cut 22 is somewhat larger
 than 21 & is very
 similar on N. side -
 wonder if that bluish
 stuff is loam?
 Here S. side is somewhat
 similar to N. side, but
 shows ~~some~~ yellow loess(?)

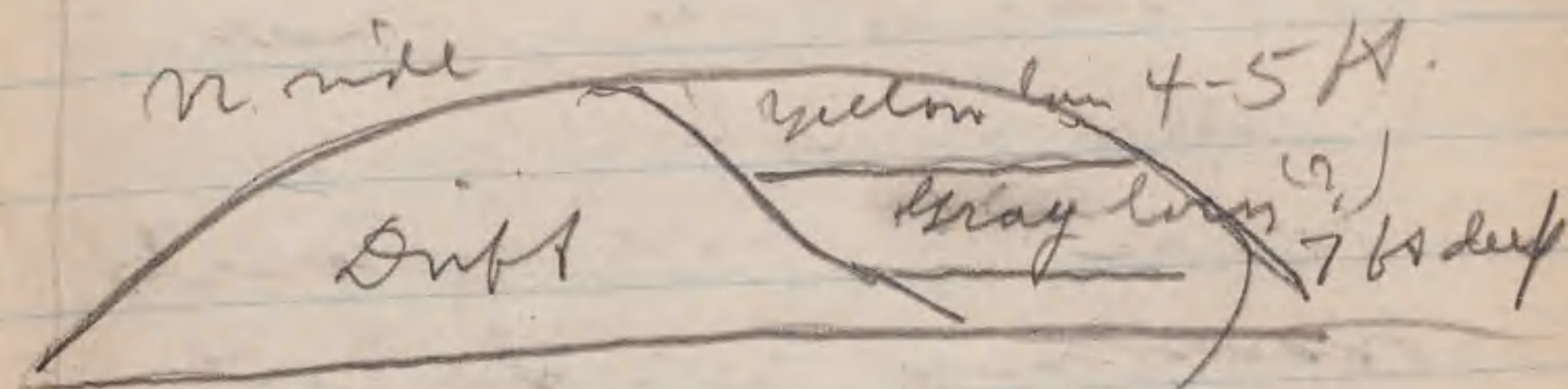


S. side



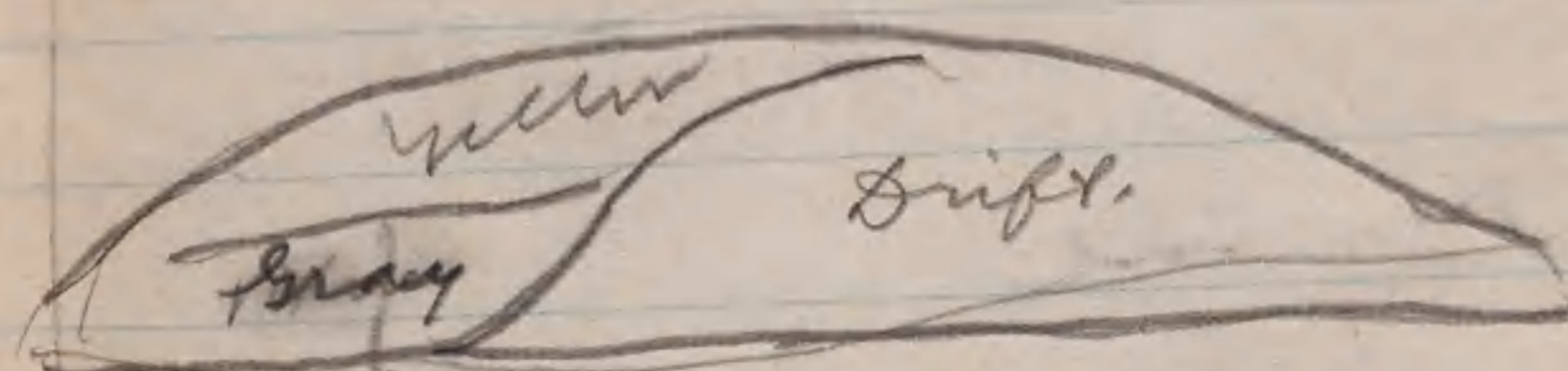
Probably 25 ft deep.

Cut 23 - must be 25 ft
 deep. Both sides are
 almost exactly same



(See sample)
~~at base~~

The S. side is same at
 E. end.



6 ft

Cut 24 is large, W. 7 ft. from
 it shows loam, & has a
 whitish layer (oblique)
 near base at E. end. Is
 this gray loam?

Reached Sedham at 7:10 PM
 & left at 7:40 for Manning,
 Hurried across to C. Co. Western
 & caught train for Harlan.

Reached Harlan at 9:45 PM.
 Had been without food
 all day, since the 5:30^{AM} lunch
 at Coon Rapids.

Cold night. Was very
 rheumatic in left hip
 and back.

Aug. 23-1913 - Sat

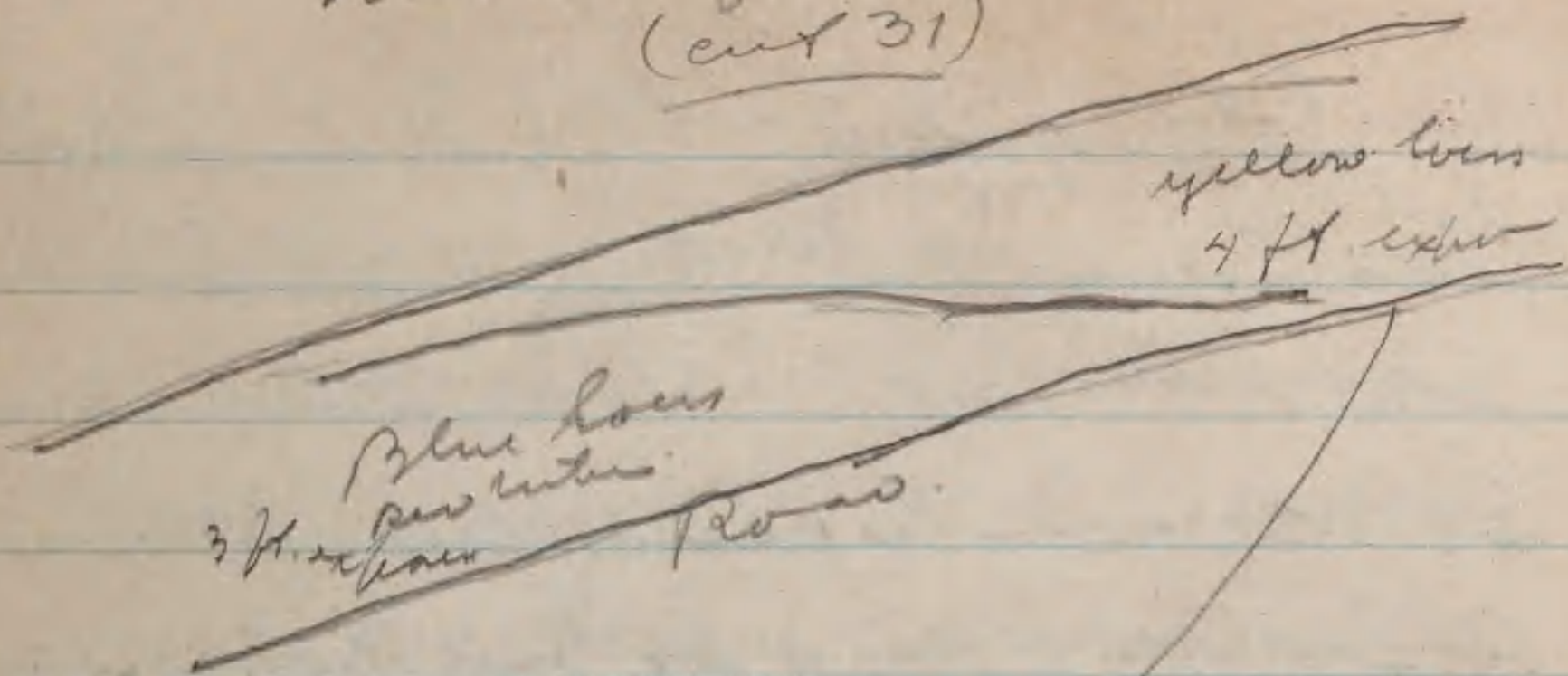
Too lame after to get out. Worked
 up notes, etc. In afternoon drove
 E & W. in Shepherd's car, with son
 Allen & a son of Dr. Gus. Moore. Went
 to Rabbit Hollow.
 In addition to specimens taken

ran following in Rabbit Hollow

Zilic an.	Queen
Wilm an.	Am. oak
Corylus an.	Engl. oak
Garya	Walnut.
Prunus	Ostrya (ind. m.)
Vitis	Ribes gracile
Ranunculus	Celtis
Rudbeckia laciniata	Asplenium platyneuron
Papaver canad.	Desmodium
Thlaspi	Prunus virginiana
Geum virginicum	Euponymum
Asplenium (pink)	marked on map
the first cut = 2nd cut	

at 3:10 PM the east bank on slope facing
 west in sec. 10 near Rabbit Hollow
 shows both blue and
 yellow loess. Neither shows
 fossils & saw no nodules. (over)

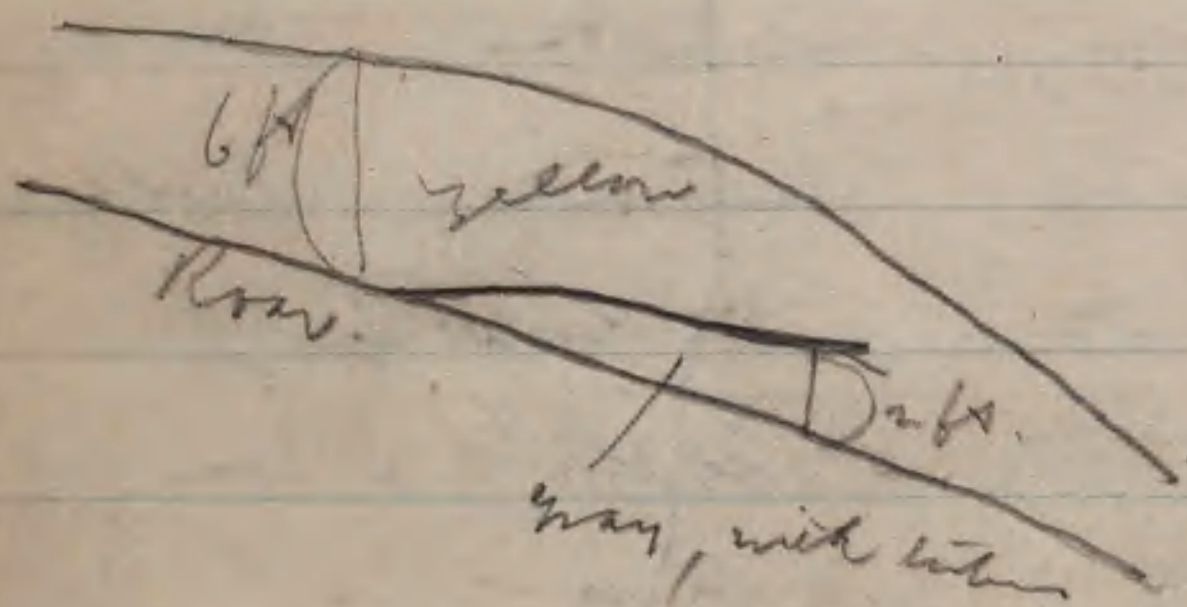
W. side of 2nd cut
(cut 31)



at this point
a red layer (very distinct)
about 1 in thick was
penetrated by blue loess
under it.

Cut 32

The 3rd cut on slope facing E.



no fossils - the line
between the two is sharp.
The lower part of yellow
loess has streaks of gray.

yellow loess is exposed on E. side.

note 10-79-38. Marked on map.
cut 33 a long cut showing yellow loess. faces W.

In Bowman's grove

Actaea rubra *aralia racemosa*
Rudbeckia trilobis
Prunus virginiana

In Bowman's grove

<i>Prunus am.</i>	<i>Erythronium (red)</i>
<i>Quercus macrocarpa</i>	<i>Crataegus mollis</i>
<i>Shagbark (common)</i>	<i>Nem. am.</i>
<i>Fraxinus</i>	<i>Euonymus</i>
<i>Green ash</i>	<i>Swampy Birch</i>
<i>Rhamnus lancea</i>	<i>Carya cordif.</i>
<i>Prunella (faint)</i>	<i>Pignus</i>
<i>Buxus</i>	<i>Celtis</i>
<i>Ribes grande</i>	<i>Vitis</i>
<i>Lappula virginiana</i>	<i>Galium triflorum</i>
<i>Nerispermum</i>	<i>Hystrix</i>
<i>Rachis (blue)</i>	<i>Corylus</i>
<i>Xanthoxylum</i>	<i>Eupatorium verticillifolium</i>
<i>Festuca? and grass?</i>	<i>Geranium</i>
<i>(fine grass - low top)</i>	<i>caeruleum</i>
<i>Praderia</i>	<i>Fine Mulleberry</i>
<i>Amelanchier</i>	<i>ambrosia</i>
<i>Corex (2 sp.)</i>	<i>Cryptotaenia</i>
<i>Agrimonia stri.</i>	<i>cleistan</i>
<i>Desmodium grandif.</i>	<i>groundhogs</i>
<i>Phytolacca</i>	<i>Smilax</i>
<i>Acta cordifera</i>	<i>agradia</i>
<i>agrostis</i>	<i>Phlox divaricata</i>
<i>Loxanthus (pink)</i>	<i>Compositae</i>
<i>Androsace racemosa</i>	<i>Prunus</i>
<i>Cleistan</i>	<i>Prunus</i>

Amelax cuneata *Sanicula maritima*
Polygonum dumetorum *Asclepias* "
Eupatorium purpureum *Grass* *trifolium*
Candiblylla *Ulmus* *frax*
Elymus striatus *Solidago canadensis*
Caryophyllus *allium tricoccum*

cut 34 near SW. cor. sec. 6, Jackson
 Twp. on down hill yellow
 loess above, blue loess
 below & drift near base.
 Cut not distinct, most of
 it about 4-5 ft. deep.
 At Rabbit Hollow found *Cochlicopa* feeding
 on *Disco*.
 I collected shells in Rabbit Hollow
 on a wooded bank, rather low down.
 At Bowman's Grove I collect
 shells (under leaves as above) in
 upland woods.

On N. side N. 1/4 - 34 - 80 - 38 yellow loess
 appears in road cut. (Marked on map.)
 On slope facing N. on E. side S. 1/4, N. 1/4, sec. 4, T. 9, R. 38, E. 1, shows
 yellow loess. (Marked on map). Kansan loess along road.
 On return the intersection of
 wagon road & C. & W. RR.
 near Marilyn's Brickyard = 1220

Aug, 24, 1913 - Sun.

1177 on C. & W.
 1165 CR 9 & P.

1150 river bridge S. E.

1262 - top of bluff near SW. cor. sec. 20

cut 35 - the cut between the ^{SW.} corner of
 sec. 20, Centre Twp. & the foot of
 hill runs 5-6 ft. deep and
 shows yellow loess in upper 1/2.
 This is brownish, with gray streaks
 & quite a number of rounded
 nodules (see samples). Shells few.
 The lower half of hill shows
 drift, separated from loess by
 a gray band (not over 1 or 2
 ft. probably) with iron tubules,
 but much & hard. *

High place E - 1318.

Hazel & some bur oak appear
 here along the road - also fine
 strip of upland prairie
 with bittersweet.

Aug 26 looked at this again & dug in bank. More green loess in
 at least 2 or 3 ft. thick, possibly more, & much is only at very base.

1374 CR 9 & P. mid attention

The road is gray where
blue loess appears.
($\text{cr} \times 15$) ~~W. W. W. W.~~ ^{near S.W. cor}
~~W. W. W. W.~~ ^{rec. 17-19-38}

Blue loess below - distinct,
iron tubes, nodules, fossils
(see vol) yellow loess above
Saw also, showing thin
venues of loess. See sample of gray loess.

At top 1 or 2 ft loess

1160 ~~W. W. W. W.~~
1174 - CR 9 & P

1308 - at hotel. at 5:45 AM
In afternoon drove out with Shepley to Zenn
Took photos 23x & 24x
of "Lincoln Park" N.A.
Escher's place on the E. side
of nr. 19, Lincoln Twp.

1308 - 1374

CR 9 & P

with attention

August 25, 1913 - Mon.

Redfield hill = 1358. - With Fred Peyton

went north to Redfield's & then west

Cut 41 On slope (S of top) to Redfield's
hill a cut shows yellow loess
5-7 ft. Cut 42

Cut 42 Cut 42 is on slope facing
W. It runs 5-6 ft. &

its lower 2 ~~to~~ ft. is
distinctly gray loess, with
tubules & fossils (see spec)
and this grades up into
yellow loess. The

transition here seems to
be quite gradual.

The yellow loess is heavy, mottled.
On the N. side the transition
is more abrupt.

Cut 43 Cut 43 at very base shows
a rusty hard pan
Just above this the blue gray
is much, then ending gray

1358 1374

CR. 0.0 - 2.25

mid Atlantic

loam with tubes, no bones
could not make out sharp
line.

yellow loam is 4-5 ft
exposed & contains mostly
rounded nodules, layers.
In lower third of slope
some small nodules
appear at surface.

Slope base E.

Cut 44
Cut d is on steep slope facing
E. The base shows drift -
well up by way of a deep, then
gray belt appears across
road. This is gray loam
(much at very base) with iron
tubes & scattered round nodules
rare in fossils.

It is probably 2-4 ft thick
above it, ^{the} cut (with gutter
on side) runs 5 to 7 ft. but
is overgrown. Shows yellow
loam, heavy nodules.

Top of hill = 1417

Photo 5 & 6 - view of road looking
S of W.

Cut 45
Cut e is not very distinct but shows
gray streak towards base.

Cut 46
At f a red much layer shows
at base. ^{for some distance} then ~~indistinct~~ gray
streak) but yellow loam to top.

Cut 47
Cut g - facing E - shows yellow
loam about 4-5 ft exposed &

gray streak - with iron tubes
Cut 48
At h, - 1467 - there is a low
cut on very gentle slope near
top of plateau, which
shows gray loam - with
iron tubes, with very
strongly rusted - layer
above (5 or 6 in. or more)

I could not make out
distinct yellow loam, but
there seems to be some.
It must be very thin.

cut 49 from 60

cut 49 same as
Cut i. is 3-4 1/2 ft, but largely
overgrown. The little gullies on
each side expose lower bed.

The usual gray streak, with
good gray coen, iron tubes & all,
but no fossils, appear $\frac{1}{3}$ way up -
Above this, yellow.

cut 50

cut 50
Cut j, is similar - facing E. Not
quite as prominent.

cut 51

cut 51
Cut R. is practically all yellow loam.
Shows little bit of gray in loam.

cut 52

cut B is 4-6 ft. mostly yellow but
seems to show gray below. Faces 2.

Ent 53

Cut 53
Cut m - show gray trees below

yellow

on ^{yellow} line of sec. 13. 79. 40 two yellow loess exposures. See map.

cut 2 is on a rather small
slope, facing E. Gray loam is
exposed for $\frac{1}{2}$ way (5 ft. vertically)
up the slope & the rest is
granular yellow loam (see sample)
The gray loam has many iron
tubes, with a lot of

concretions ^{nodules} & many shells.

The shells run up slope. Below
Lymnaea is more common, & I found one
Carychium. Uppermost part of
slope has succ. arava, Pyram.
Stretella & Shumacher, ^{Valonia gracilicosta} Porba decora
& many succ. ovalis (oblique).

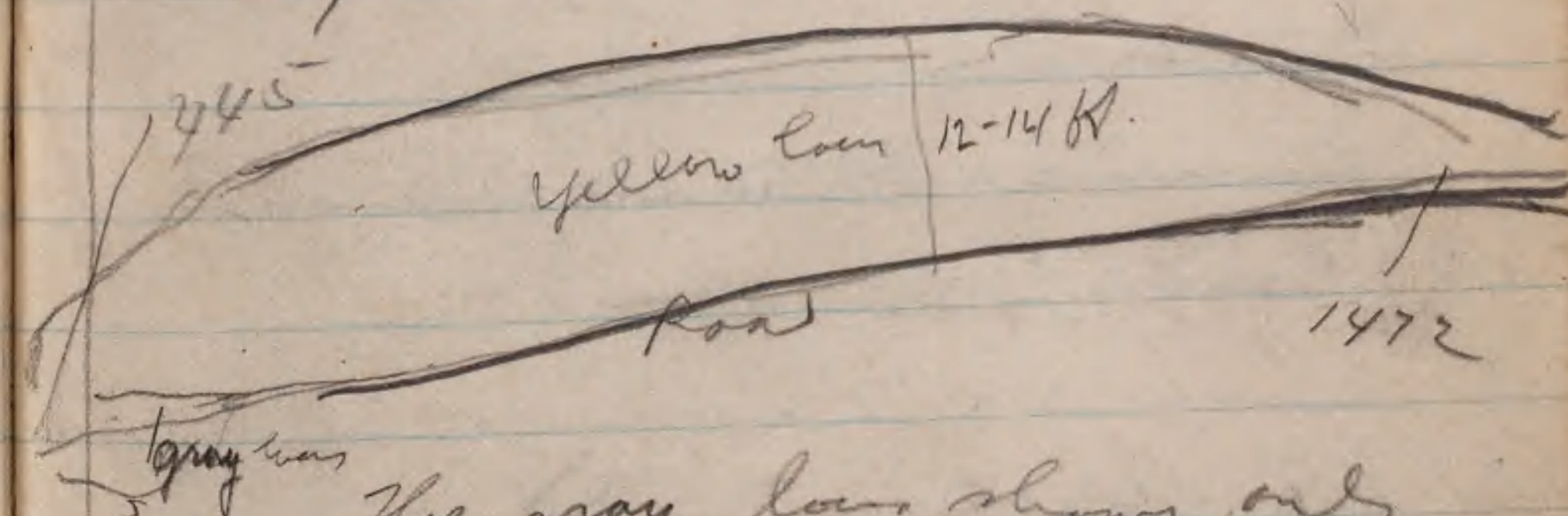
Just make arrangement in
modern form.

Cur 55

Cut 55 -
Cut 0 shows yellow loam above &
along slope quite a bit of gray
with tubes & nodules - no shells
drift at foot of slope.

CuY 56

Cut 56 is the deepest cut seen today



The gray ^{loam} shows only
at base North., about 1-1 1/2 ft.
The line is quite sharp. The
yellow even just above is more

mottled than higher up.

The yellow loess is just like that of western Harrison Co. It has fossils all through, but rather more above. A few very large round nodules.

Base of cut 1445 (bottom 5 ft. low)

About 150 yds long

Top of road 1472
Yellow loess in 3 cuts. See map. - sec. 15-79-40
cut 57 Cut 1 is long, yellow above, just a little gray towards base & red mud at base.

Stopped at Portsmouth.

Dinner at Portsmouth Restaurant

Feed barn.

R.R. 1360

1412 is top of mts above r.
cut 58 ^{faces N.} cut 2 - shellon, along road, shows drift almost to

top of ridge (not its highest part) There is only a thin veneer of yellow loess on top.

cut 59 S. - shows mostly drift.
cut 60 (on N. side of S. side) shows yellow loess above a foot or so of gray loess. Oxidized layer above gray loess strong in road on S.E. side. Southward, down hill, drift shows again.

cut 61 facing S. - shows drift well up. Indistinct gray, then yellow. not thick. 1400 ft.

On high prairie saw here
Polygonum ramiflorum
Iva axanthifolia
Verbena stricta
Astragalus can.

cut 62 V. shows the thick yellow loess (10-12 ft. exposure) with few large nodules & fragments of shells. Recognized S. aware

This cut slopes S. & at base
shows Kanran.
cut 63. W. - shows much drift at base. Look up hill S,
cut 64 X shows drift very high, -
with much reddish slaty
loam at top, scant, with
nodules in lower part.

Creek - 1385

Foot of hill 1410

Top of Kanran 1445

cut 65 Top of road 1485

Y- cut shows Kanran at
base & up - then a
strata of gray loam,
vertically about 6 ft, with
few spec. of T. avar.
Then yellow loam with
large round nodules, and
shells scattered through,
more than in gray.

The cut rises about 4
ft above top of road

The upper part of yellow loam
has many small nodules at top
of hill.

The difference in color in Y
(which faces W.) could be seen
a half a mile W.

cut 66 Z - is not deep but
shows gray loam - thicker,
with many small nodules &
iron tubes. Saw no shells.
Upper part yellow.
Cut only 4-5 ft deep. Hill
steep.

cut 67
Cut A is 7 ft deep, overgrown &
shows yellow loam. Faces E.

cut 68
Facing W. Similar to A.

cut 69
N. of 68 a cut in road shows gray streak (see map)

cut 70
" " Gray loam shows
tubes & many nodules
yellow above.

cut 71 shows gray and yellow
loess. A low cut.

Too dark to see remaining
cuts,

Aug. 26, 1913. Tues.

1323 = RR JVP depot

Another quiet clear day.

1305 = bridge S.E.

Looked again at section ^{cut 35} near S.W. cor
of sec. 20, 79-38. (See notes back

Aug. 24)

In N.W. part of 31-79-38 drift
appears along road, which have
just cuts into bank. Sand pockets
show, - mostly small.

There are excavations E. of this
cut which have the appearance
of old sandpits, but show no
trace of sand, - only yellow loess.

They are near top of ridge &
quite extensive.

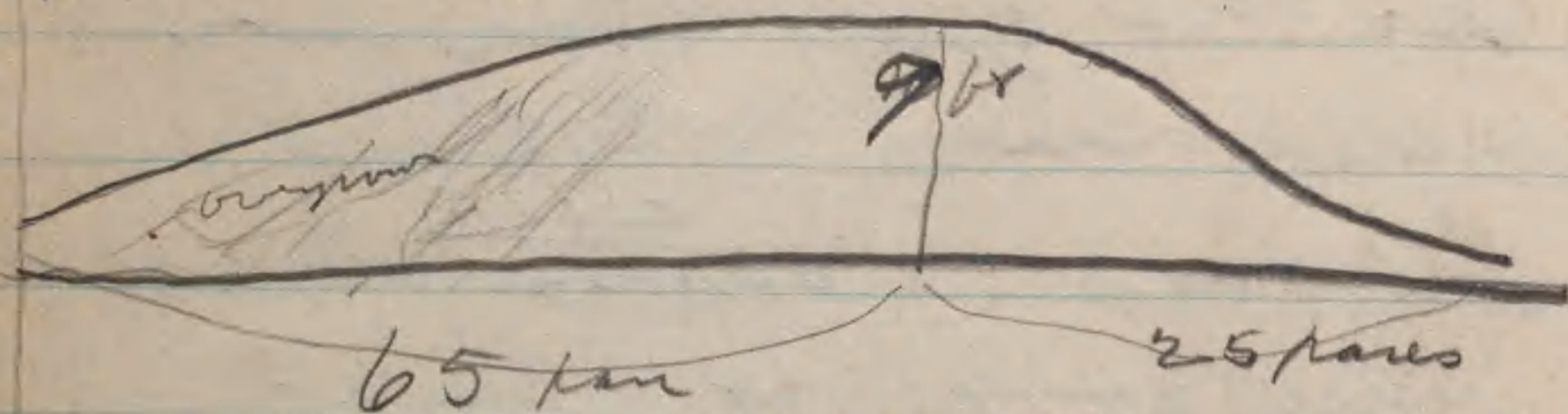
Corley - RR - 1260

cut 73

cut E just above Corley is in
end of terrace like plain.

It is over 100 ft. long, 10 ft
deep. It shows yellow loess,

loose, with some gray streaks
and nodules or fossils.
W. side cut E



Took sample from a pt. 6 ft. below
top of cut at highest pt.
from talix ^(normal) misra & discolor
in bottom land at Corley.

saw a lot of fine walnuts,
all the terraces below Corley
show yellow dirt, & yellow cuts

Stopped for dinner at
Hardy Frederichson's home.

1274 - Dinner in front of Frederichson
home.

1250 - River bottom N.

Just below house N. of
Frederichson, there is a gravel
bar. Few in river. ^{& in this part of lake} Shells.

No shells on it. These stream

are singularly devoid of shells.

Cut 74

Cut F is over line S. about
12 ft deep.

The loess is heavy, gray,
with many dark spots &
streaks & also reddish
streaks (all of iron), & a
few nodules.

Below it became very gray
with a few large tiles, & few
fragments of fossil shells.

In the $\frac{1}{2}$ & $\frac{1}{2}$ place there
are shells - 6 ft. from top
& up. See samples. The

latter overnodes yellow.

All this (almost) abides
to be gray.

^{similar to 74 but smaller}
Cut 75 also shows gray loess.

Cut 76 was just being cut &

showed only yellow loess.

It is 4-5 ft deep. Contrast
with 74 is strong.

Returned to Lusk

Aug. 27, 1913 - Wed

Spent forenoon working up notes and plates

In afternoon walked out to Baughman's brickyard.

1261 - elev. of RR (C. & N.W.) at intersection with road SW. of Baughman's brickyard.

Cut 1

Examined the Baughman Cut. There is a soggy, sticky place at base - Scirpus stramineus, etc. growing there.

The bank is about 20 ft. high, but is so badly slumped that about $\frac{1}{2}$ of it only is clear. It is gray loam, heavier below (from one ~~stratum~~ ^{rusty} streak 1-2 in thick near base).

The "gray loam" appears to be about 6 to 10 ft below top. The iron

Map of L. 1374

CR 9.00

with attention

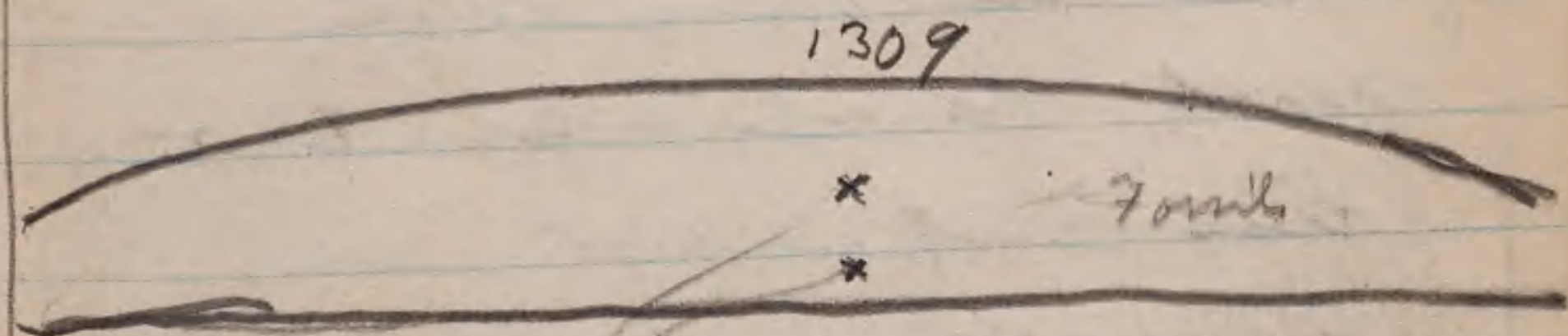
tubes show well, there
are some rather larger
or medium nodules &
shell is scattered about
in it.

Downward the loam is
muckier, without tubes,
with iron clumping, &
here the chocolate band
appears (at about 15 ft.)

At 16 ft from top the
rusty band appears. The
stuff is here least mucky.
Most of it is darker blue gray
& has rusty streaks
through it.

The gray loam runs down
10 ft. Then there is a
similar layer, but mucky,
with horizontal rusty or
brownish bands, & broad
brownish streaks or bands

as if separated by gray tubes.
I could trace this down 5 ft
& very rusty layers are in
it. The water of the
springs seems to come out
just below this layer.
There are no iron tubes
in lower part. Looks
water laid. The gray
loam is hard when dry,
has iron tubes & a good
many larger, rounded nodules



Samples

Browner

The top shows 1-2 ft. of ~~loam~~
" yellow stuff, but evidently
part of same layer.
Covered by roots, etc.
Top of bank 1309
Base of shingle part = 1379
General level of hilltop = 1374.

The ridge to the N. river,
about 20 ft above top
of bank. It is a
long rather low ridge, a
part of general topography.

Picked up shells under leaves
above bridge. *Corbicula* &
Mac. anona were most abundant
on higher banks among *Syrphothrix*
veriduloides, etc.

Cut 2 is an irregular series
of exposures over 100 yds wide,
with slumps where water
scaps out.

At 1305, in the path,
there is Kansan drift
reddish & gray, hard, with
pebbles. Just above
this path there rises a
bank of gray loess, about
6 ft., with numerous

nodules & little iron.
The Kansan drift seems to be
just a small bit on surface,
possibly draped?

Below it in bank is gray
stuff like at 1.

I cut into base of bank
of loess & found strong
oxidized layer, & below
it much stuff somewhat
similar to that in 1.

All this is above rapids
place.

Towards N. end of sec. 2
there is an exposure
more or less slumped,
which shows at base
6 or 7 ft. of rusty more or
less conglomerated sand &
gravel, below which
water scaps out all
along. This changes

March 1 3345

CR 1.0.0. 2225

mid afternoon

quite abruptly upward
into a heavy drift
like stuff (see sample)

The red color of both
shows little differentiation,
but the transition is
quite abrupt.

There must be at least
6 ft. of this red drift
& then it grades into
at least 6 ft. more of
red much. On top
of hill there is gray
loam.

The base of the sand &
gravel layer = 1307

Under the sand there
is a layer of heavy
blue black stuff
similar to Hebrathum.

Its top = 1313

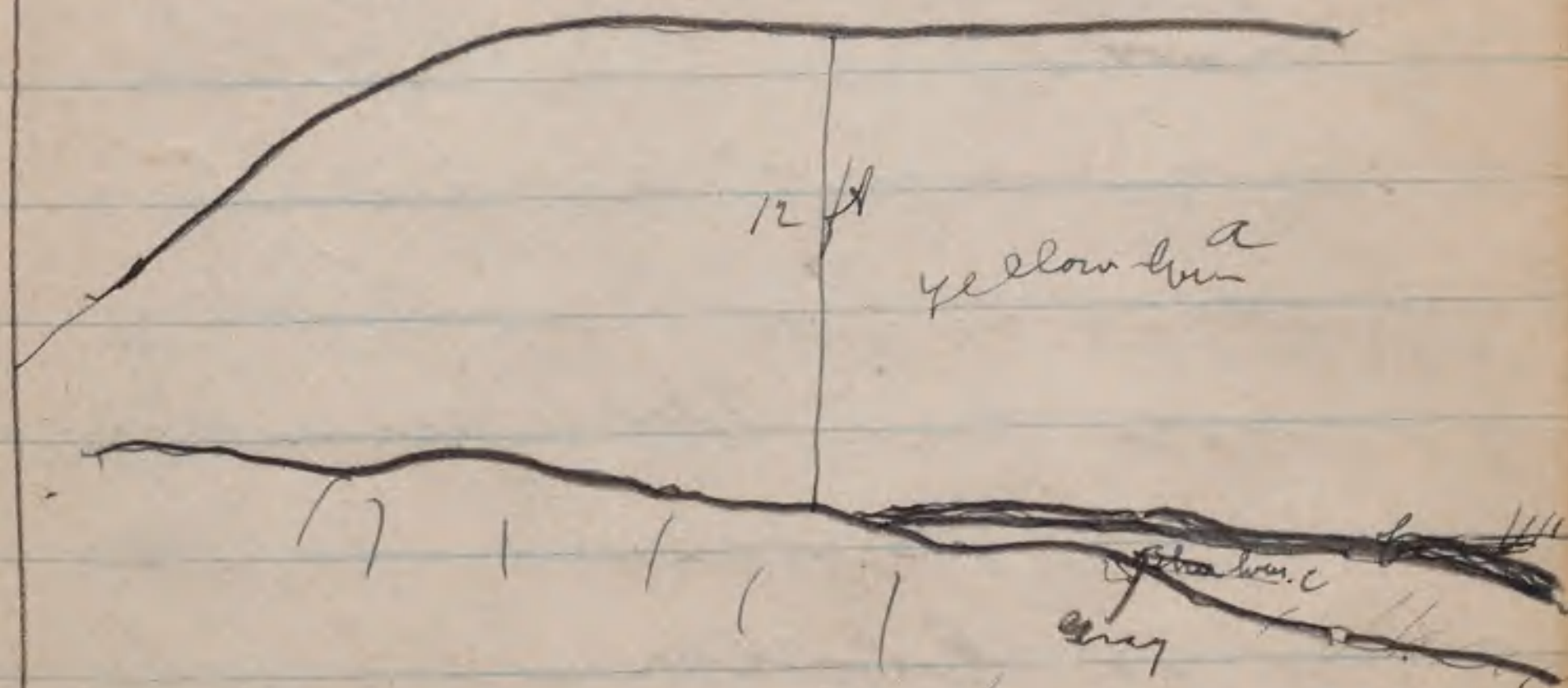
Water in river bank 1290

Water runs out above
this layer from sand,
all along the exposure.
The water in river is about
8 ft. below top of bank.

1299 = road on way to Redfield
1380 = Redfield hill - river

Cut 3

Red field cut - about 12 ft.
exposed. Base about 4' above
natural bottom & the latter is
about 8 ft. above river.



a = yellow loam with grayish mottling,
compact, with some nodules & shells
scattered all through. See spec.

b. The oxidized layer is 2-4 in wide,
irregular, & sharply separating the
two loams.

c. The gray loam shows fragments of
shells (we looked like P.L. milt. lites)
but could save none. Took sample.
It has brown streaks and ^{some} tubules
but some mottlings, ~~not~~ nodules.
About 1 ft. exposed.

Aug, 28, 1913 Thurs.

1170 = CR D & P R R

n. side cut 5

n. cut 5 road cut 4

Really all one.

Top of cut 5 = 1209

Two cuts near S.E. cor. sec. 25-79-39 are at
edge of bench & show yellow loam.

Cut 77 - { 6 ft. pit corn buried on N. side
of road only. More exposed to S.W. winds }
Cut at N.W. corner of sec. 36-79-39

shows gray loam, with strongly oxidized
layer & plates of calcareous nodules
on top, running somewhat up slope.
Above the loam is bluish ^(gray) below,
yellow above. The cut shows

mostly in little gatter clay, some
yellow loam shows in cut W. of 77. See map.

Cut 78 on N.E. of NW 1/4 - 35-79-39, a low
cut runs up hill (facing E) & is mostly
orange) (3-4 ft) It shows gray
loam, with strong oxidized layer
on top, & bank on side shows
yellow loam mottled with gray.

Oxidized band also appears on
 hill end of this in road on top,
 cut 7.2.
 Near NW cor of 35-79-39 gray
 loam appears on slope. It has many
 small nodules. Only a little of the
 bench shows (about a foot) and all
 this is gray. The covered part of cut
 runs 2-3 ft higher.

Cut 80. Shows gray streak & nodules in yellow loam.
 cuts 81 & 82 are along RR & were not examined.

Cut 83.

1258 = top of cut N. side - W. of row.

1215 = track at N. end cut

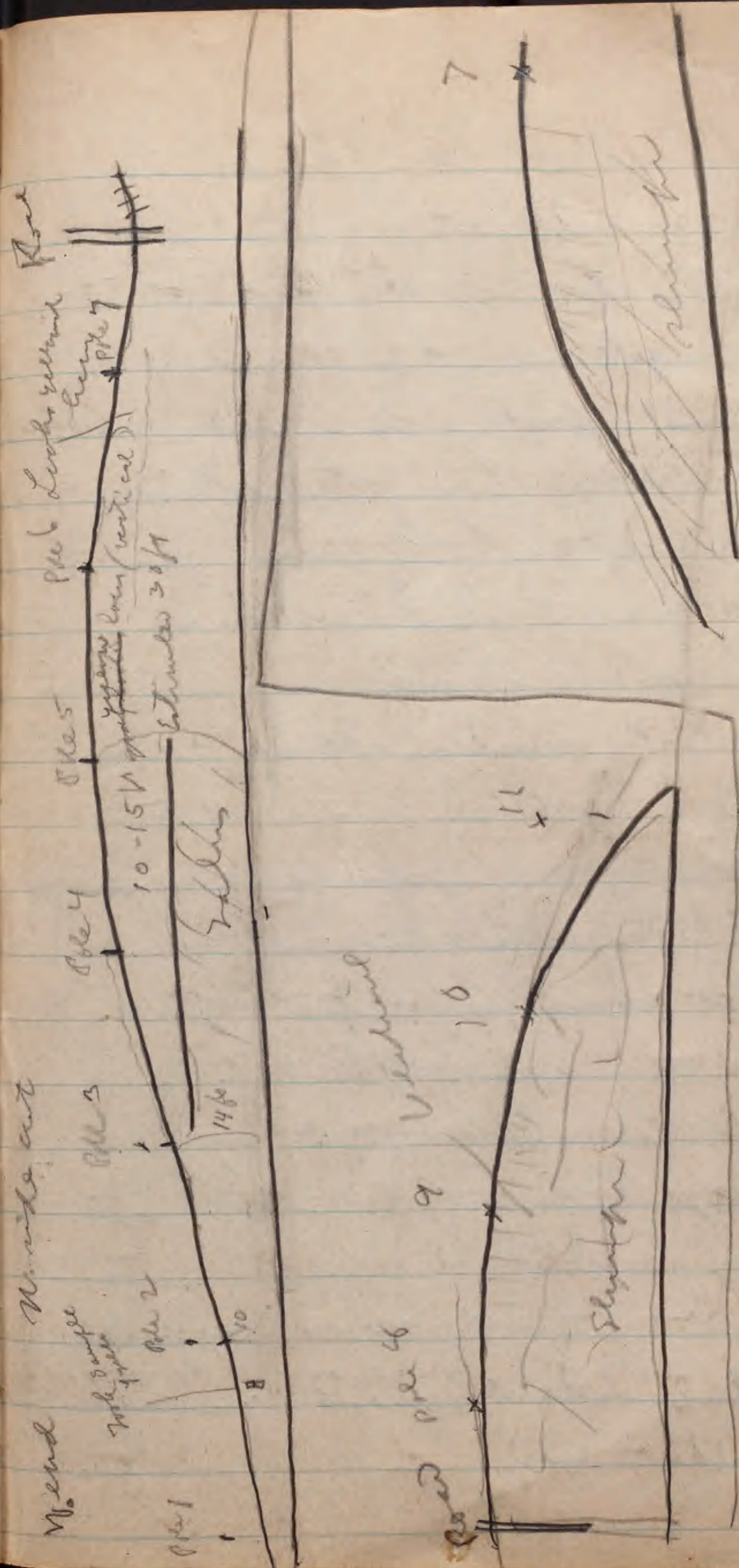
Base of cut under top = 1216

at 150 ft E. of W. end took
 sample of upper yellow loam
 (has many nodules) at 2 1/2 ft.
 from top, + 7 ft. above track.

Off Pole 7, S. side. Gray loam
 runs up ~~from~~ above 1201 on RR to
 1226

Highest part, S. side, off pole 5 = 1240

The gray loam has rather few
 iron tubes at 7 & also at 4.



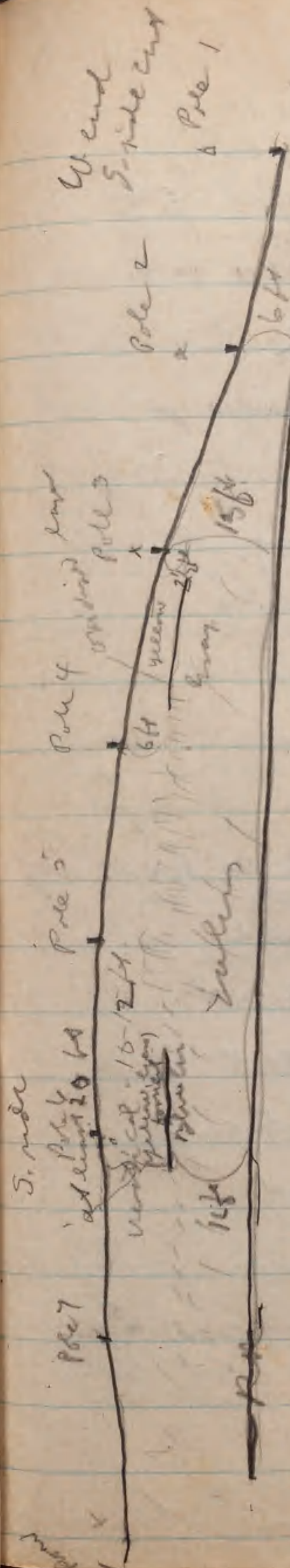
On S. side at height of
16 ft above track gray loam
stop, with oxidized strata &
passes gradually into a yellow
fossiliferous loam which stands
vertically on both sides.

Medium rounded nodules are scattered all through.

Coarcted shells, white, pale b.
Zoo. ramifies yellow at 5 ft
above base. Gray 1 ft below its top.

Took nodules from yellow
The line is quite sharp,
the oxidized best ending
abruptly below, & joining
gray loam.

This is not across long ridge,
which doesn't seem to run out
either way.



At Pole 3 - an overlap band runs below surface - $2\frac{1}{2}$ - 6 ft. as shown.
 Fresh samples - yellow 2 ft. from top; gray - 7 ft. from top.
 The yellow is lumpy, brownish, the gray has many iron tubes
 & lots of nodules. Shells occur, but not plentiful, in
 gray only.
 Collector: fossils scattered all through gray even
 in its upper 5-7 ft. Between poles 3 & 4
 I could trace the gray loess for 10 or 12 ft. down
 & then taking cover it.

1807. 1374

CR, 1000

with attention.

cut 84 in wagon road faces W &
shows gray streak in road.
Top of hill E. = 1258.

cut 85 - shows yellow loess (Sep. 4. noticed gray loess, it was very distinct & showed boulders.)

cut 86 - shows gray loess in road with nodules. Chert like lines in road further up, - evidently yellow loess.

cut 87 - shows gray and yellow loess in road.

SE 1/4 NE 1/4 14-81-57 N. cut 7 faces N. yellow loess at top with many small nodules.

Same - faces S. (S. cut). Shows drift capped with yellow loess.

NE 1/4 SE 1/4 sec. 14 - Small hill with thin cap of loess. Drift shows on both sides.

SE 1/4 SE 1/4 14 - Drift shows well up hill. yellow loess on top.

Same - S. side. Shows yellow loess with small nodules above.

cut 100 - faces E, 6-8 ft. of yellow loess. Much gray. Larger road cut. Reddish at base.

Cuts 101 & 102 show gray & yellow loess.

cut 103 is old brickyard.

cut 88 - a smaller RR cut

cut 89 - a large RR cut

cut 90 - a smaller RR cut

cut 91 - an RR cut.

Cuts also on W. side sec. 28 & 21-79.

no yellow loess and one gray loess.
cut 92, faces E. shows gray & yellow loess.

" 93 - " E. " " " "

" 94 - " W. " " " "

" 95 - " E. " " " "

" 96 - " W. " " " "

" 97 - " W. " " " "

" 98 & 99 - yellow at top gray below. Loess.

In evening went to Botana, met the Shavers, and went to farm. made check for 9.50 3 1/2 days.

Aug. 29 - Fri. 1913

starts S. & W.

(Look at 9th page for more) cuts 104-106

On road S. at points marked the yellow loess on top of hills has many small nodules. Same in road west in first mile.

cut 111. A rather low knob (end of ridge) shows drift almost to top. The next hill 4.

SE 1/4 S. 1/4 15-87-37.

11, shows gray loess, with nodules & many nodules on lower shelf of a gradual slope, & then more abrupt top in yellow loess.

The gray runs well up to half way, and at that point a little further & bank shows yellow above, with a fairly sharp line between.

cut 112 shows drift & loess. Hill W. of middle of the line sec. 28. shows boulders drift at base & then rather steep hill does not show anything well until top, where yellow loess appears.

cut 113 shows drift & loess. Hill W. of middle of the line sec. 28.

shows boulders drift at base & then rather steep hill does not show anything well until top, where yellow loess appears.

Map 1374

CR. 110. 1. 2. 3. 4.

with attention

Cut 114

on E. side of sec. 29-81-37 yellow loess appears, with small nodules in upper part.

Cut 115

On E. side of sec. 29-81-37

there are two banks along W. side of creek, - show what appears to be Kansan, with small boulders & a little sand. Yellow loess above in lowest exposure.

Come to east.

Cut 116

Along road, on slope facing E. Kansan runs up more than $\frac{1}{2}$ way, with barely a soil covering on sides. On top yellow loess is distinct, but intermediate slope not distinct.

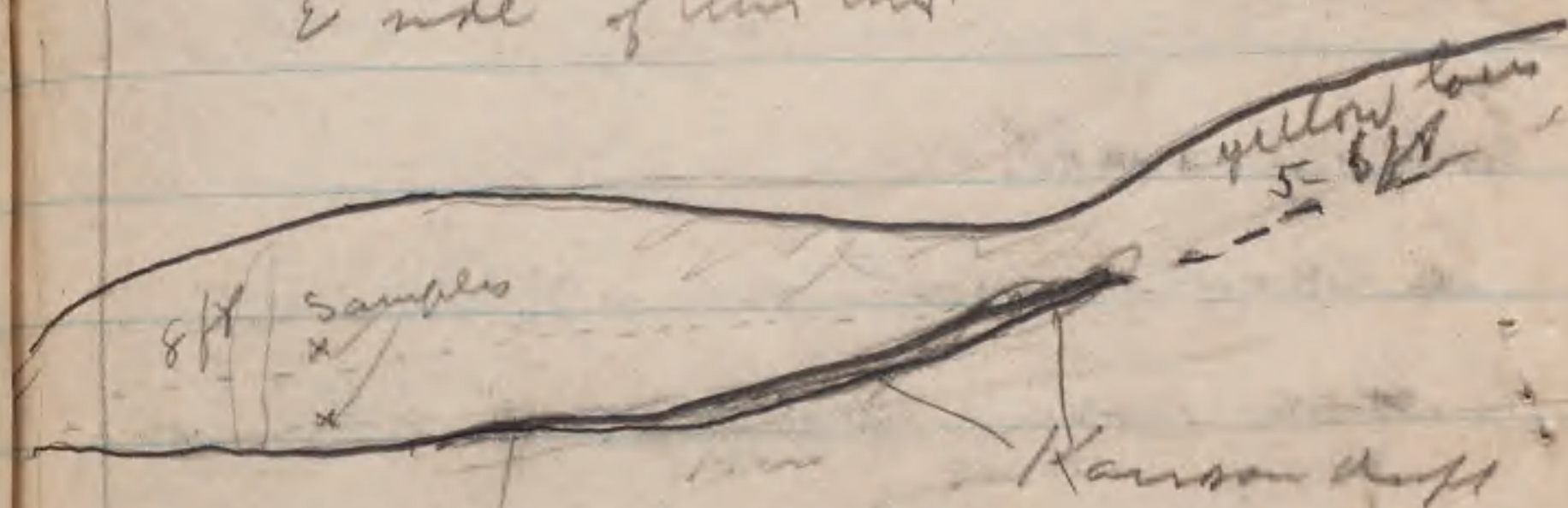
Cut 117

the exposure on hill facing N. in sec. 29-81-37 - shows deep gutter & cut near base. A few small boulders & pebbles are washed out at base. The greater part of the exposure shows a yellow loess 6-8 ft exposed, heavy, with brown & black spots & streaks of with gray clauding. No nodules or

forms on the lower slope.

Below it is quite hard & muddy.

Took sample of this heavier part at base, & another 5 ft. higher. The latter is lower stuff. E. side of this cut.



A heavily oxidized layer, with what appears to be gray loess underneath.

Cut 118

On N. line of 32-81-37 there is an exposure of yellow loess - 8 ft high, - with a few nodules, & shells scattered through. See spec.

Cut 119 - at base of lay slope facing W. drift appears near school, - for some distance up hill.

March 13 1914

CR 4.10 1914

with attention

(= cut 118).

At turn, on N. line of 32-81-37 there is a bank, on N. + W. side of road, which shows 8 ft. of yellow loess. It is rather soft, but of the older type with grayish streaks and mottlings, and has some nodules (medium or small) (see samples), and shells are scattered through, especially in lower 5 ft. (see shells and samples.)

Reading at base of this cut = 1345
at base of long slope west } = 1265
on bottom

This shows drift distinctly at base. The Kansan is light ^{bluish} gray and yellow, and has rather small boulders and pebbles, some Sioux Quartzite and some black.

C. & W. RR. at Junction = 1249

C. & W. RR. " " = 1256.

Cut 120 - faces W. - Drift. - Top of hill yellow loess. Cuts 121 + 122 show much drift, with cap of yellow loess. 122 faces E. 121 faces W. Cut 123 - shows yellow loess. Faces S. 8-10 ft. Drift below. Cut 124 is along high hill. Faces N. Drift high up. Yellow loess.

We drove to Highland Grove in the S. 1/2 of sec 5 & 6 in Polk Twp. I noted following:
Lilia americana - very many on uplands.

Red Elm - very many on uplands

Bur oak - " " " "

Crataegus mollis - common

Prunus americana

Pringent

Chokeberry

Ribes gracile

This is a large grove, and in a very rough territory.

Picked up a lot of snails at a point = 1464 ft.

The top of the hill S. of this = 1480.

The snail patch was in brush and among trees, on W. side of road on a northerly slope.

Base of hill N. = 1374.

118a also on E. side sec. 36 (Ar. 2 1/2) 81-38 - showing drift & loess (see plant)

Map 1 374

CR. 1. 1. 2. 3. 4.

with attention

cut 125 - a little drift at base, - 4 or 5 ft. of yellow loess.
 cut 126 - shows yellow loess.
 cut 127 - yellow loess - 4 or 5 ft. - nodules.

Went N. from Highlow Grove & W.
 On N. line of sec. 10 - The
 hill to river joins W. Ex
 shows yellow loess at top &
 on slope some sand, then still
 lower a rusty compacted sand
 & gravel. This is very rusty.
 Below is a gray heavy
 drift extends down towards barn.
 Stopped at Brown's Restaurant
 at Kirksman & fed at Livery barn.

1318 - Dept C. G. W. - at Kirksman
 (C. + W. a little lower)
 Took lunch at Brown's Restaurant
 (35 cts each) & fed horse at livery =
 25 cents.

Drove south and then west to
 opposite N. end of Bowman's
 grove.
 128(a) Drift. Gray below, with iron tubes, and
 some nodules. Shows in area.
 Yellow loess on top.

cut 129 - faces west, yellow loess.

Above Bowman's Grove there
 is a small no timber

cut 130
 A great, deep gully in
 SW. cor. of sec. 29 - 80 - 37.

shows a blue gray heavy
 mud at base, & water seeps
 out above - (7-8 ft above)
 Dark red boulders are
 scattered along bottom of
 gully.

This must be 40 or more feet deep
 Heavily timbered. Streams
 NW cor of 32 - 80 - 37

Some black cherry, Alnus, Green ash
 Ulmus fulva, populus (barked)
 Hazel, Plum, box elder
 Walnut, Quercus macrocarpa
 Juniperus communis, Crataegus mollis.
 Psidium, Hackberry, Rubus cuneatus

cut 131 - Much drift on steep slope, little yellow loess.
 cut 132 - In recess of wrecked church. Red sandy mud
 showed in fresh excavation. Sandy.
 cut 133 - Faces N. On steep hill. Lower half drift.
 Top = yellow loess.
 cut 134 - Faces N. Similar to 133.
 cut 135 - Low side faces S. Almost all drift.

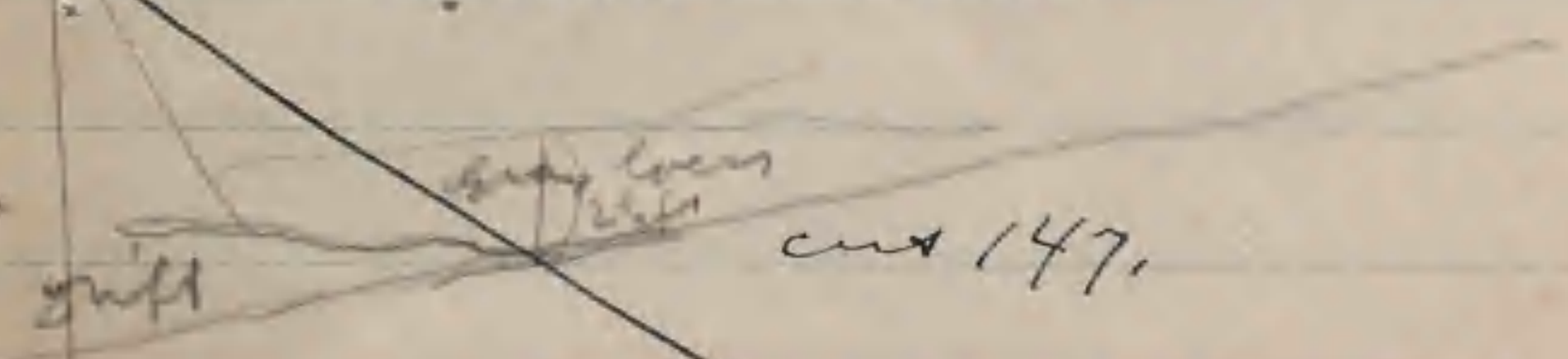
Map 137 1/2
 CR 1.0
 mid Atlantic

Cut 136, steep. Faces south. Lower part drift; then oxidized layers, gravelly, then gray much; then yellow loess on top.
 Cut 137 - steep. Similar to 133.
 Cut 138 - steep. Drift at base; yellow loess above. Faces N.
 Cut 139 - similar to 138. Faces S.
 Cut 140 - Drift; oxidized band; yellow loess. Faces N.
 Cut 141 - Drift; yellow loess; gray streak.
 Cut 142 - Drift; red ferrite; yellow loess.
 Cut 147.

Cut 143 - Drift; ferrite; gray; yellow loess; faces S.

Just W. of Clunk S. line 26
 81-37 - slope face W.

A long slope. Shows drift at base, under at top & less than 1/2 way up hill has gray loess with tubes, many small nodules, mostly oxidized.



Gray can be traced up for 100 ft or more, many somewhat banded with rows, then covered above for 1/2 the hill by yellow.
 At top yellow loess has many small nodules.

(Look back 9 pages)

faces N.
 cut 104 is on high hill S. of Shavers, and shows yellow loess with many small nodules at base.
 cut 105 - shows drift and yellow loess faces S.
 cut 106 - is a low ridge, mostly drift, with thin cap of yellow loess.
 cut 107 faces N. & shows drift & loess.
 cut 108 - shows yellow loess with many small nodules, and drift below.
 cut 109 - shows yellow loess with numerous nodules.
 cut 110 - yellow loess - nodules.
 cut 111

Map 13745 CR 100-226

cut 144 - a low ridge. Drift, top = yellow loess.
 cut 145 - Faces W. Drift; loess cap. Gray streak?
 cut 146 - Shows gray streak.
 Between 147 & see. ex. E. a cut with yellow loess & drift (see head) and drift at corner.
 cut 148 - Faces S. Drift. Thin cap of yellow loess.
 cut 149 - Faces N. Drift; ferrite; thin cap of yellow loess.
 cut 150 - Drift; yellow loess.
 cut 151 - Faces N. Drift; yellow loess.

mid attention

Aug 30, 1913 Sat.

^(cut 107)
The East hill on road S. from Shovin before
a small house shows a ^(facing W) longer (higher) rather
steep slope on E. Here loess shows
below, but it is a fill from top.

The drift runs well up hill &
yellow loess cap is not thick.

Drift also shows on the other
slope, facing S.

^{cut 152}
On E. side of 35-81-37 a slope
facing S. (the north one) shows drift in
road, with small cap of loess.

^{cut 153}
S. of creek bed, on slope facing north,
the road shows filled loess at
base; then drift is exposed well up,
or this is capped with a rather thin
layer of yellow loess with many
nodules at top. There is a reddish
clayey layer above the drift.


^{cut 154}
The 3rd m. on same sec. line is exposed
along a long slope facing S. The
greater part shows drift, well exposed

Map of 1374

CR. 9.10. 225

with attention

The bell south runs up to 1578.


 shows drift up to
 within about 10 ft of
 top, and then there is a yellow cap
 of loess not well exposed except in road.

cut 156.

The slope S. shows yellow loam with many nodules; farther down, the drift being exposed only in lower 25 ft.

Bottom of valley measures 1508.

cut 157

5. 7 creek a steep hill shows
drift for 50 ft., then upper 30
ft. show loess

The drift evidently runs up hill
as shown by Bennett's zone, which
here consists mostly of the heavy red
joint clay (see sample), with some
red sand down near base of slope.

The red layer is a foot or two thick & in it appear gray layers with iron tubes (see samples). This runs up hill for only 5 or 6 ft & then comes yellow loam with fossils & many lime nodules above.

See samples of drift & greenstone

The fossils were mostly in lower part of the yellow loam, - on lower half of slope. The nodules near

1407. 1374

CR, 11/11/11

and attention.

Top of yellow loess are many ⁺ small.
In ^{lower} older part (where fossils
found) there are fewer, large
nodules. (See samples.)

I could not get a sharp line exposure to show contrast of yellow & gray loams, but the transition upward seems to be quite abrupt. This exposure is just W. of $\frac{1}{2}$ sec. line.

No. of this exposure, across road,
there is a dense thicket of low
scrub oaks & hazel. Collected shells
with photos - looking NE.

$\gamma = \text{map}$ In $ucl_4 SE(2-80-37)$

$$4 = \frac{1}{5} - \frac{1}{2} m$$
$$m = 1 \text{ sec} +$$

Cut 158 | Faces N. + shows drift & loess.

In 54' & 56' m. 2-80-37

There is a big patch of scrub
oak & hazel.

In little comes few birds

cut 159 - faces E. drift at base. yellow loam.

160

" 160 " W - " " "
" 161 " E. Dist at very base, yellow leaves above, 5-6 ft. exposed in cut.

" 161 - " E. Duff at very low water.
" 162 - Small, S. side yellow loam, cut 4-5 ft. green, low al.

" 163 - Facies W. Drift at base. *Microgaster* *gambelii*
" 164 - Facies U. Drift. Yellow *lenticularis*

"165-Drift & loam.

"164 - Fagus n. Drift, yellow ^{leaves} ~~leaves~~
"165 - Drift & ^{leaves} ~~leaves~~
are taller than I. The hazel
low & dense.

Herbs of plain, are occasional
red along a few low forest
plants appear.

cont 167.
near S.W. cor of hwy 1 & S.W. 1/4 11. 80-37

a steep hill shows drift at base V

well up; the rest of yellow leaves

Bottom of valley $n = 1578$ - 2nd of

tree 5 = 1638. Hilf aus U.
 Fullill, 1899. Quiss: loom.

cut 168 - steep hill, faces N. Drift: loam.
cut 169 - steep hill - yellow loam.

Cut 169 - Faces 3. Drift & yellow loam.

Cur 169 - Fair S. Drift & n.
Cur 170 - " N. very steep. Drift & yellow loess.

cut 120 - " N. very steep. Out
cut 171 - Faces E. yellow loam

Stopped at Fries at store - dinner 25

horse - 20 cts

Core 1 - Very nodular loess (above), small nodules, yellow.

Drive into Ansonia East

Cut 2 (Audubon)

At edge of terrace (?) E. of river on

ms. 8.80-36. There is a copy

That shows 8 ft of yellow loess

This is rather soft, but looks O.K.

Note as fossil and no nodules.

Aug. 3 In SW 1/4 of 9-80-36 drift runs

well up; then a warm grey streak

1402. 375

CR 916-1275

and attention.

and then yellow loess.

cut 4 At slope facing E., in SW 1/4 Sec. 49-80-26 shows drift at base, then gray streak then yellow loess. A number of little hills to, of this point show yellow loess only.

So far in Audubon co. The country is more gently rolling. There are no abrupt hills visible & the river bluff slope generally are long & gentle.

cut 5 In SE. 1/4 of sec. 9-80-26 there is a sand pit half way up a gentle slope.

It shows about 7 ft. (all that is exposed) of gritty sand, more or less consolidated, cross-bedded with larger pebbles & small boulders in lines. Also a few gray, hard clay balls with grains of sand in them.

This is evidently at top of Kansan & corresponds to red layers of sand seen in Shelby. Buchanan gravels.

The knoll rises above is just a part of the general rolling topography.

cut 6 A cellar excavation at about same level on N. side of road shows that a bed of fine, ^{almost} pure sand was found above. On this slope is yellow loess.

Appears as if this fine sand ran into loess above. Could not see it clearly.

cut 7

cut 8 At NW cor. of sec. 10-80-26 the drift is plain up to near ^{top} of low knoll, where a red clayey, sandy layer appears on top (same as sand pit?) and then a very thin cap of yellow loess. Faces W.

March 13 1895

CR. 9.1.1. 1. 2. 3. 4. 5.

with attention

Cut 9 The slope of some ridge facing
E. shows drift & yellow loess.
All along from corner N. to
turn in road ($\frac{1}{4}$ mi) the
drift appears in bank on E. side.

ca 910 The rather long hill facing W. in
80-36
SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10 shows drift, with

an upper redder "ferretts" (clayey)
a little more than half way up hill,
yes, nearly to top.

Then a layer of gray loess,
resting on bedded "ferretts".

This is not very clear except
at line of contact with ferretts.

On top of hill (1/2 mi. E. of way
on upper half) is yellow loess.

Top of hill E. = 1690!

A few small round rocks appear
just above bank of ferretts. Yellow
loess on top of ridge.

The layer that appears something
like blue loess is chocolate below,
& runs quite a ways up hill. It

upper part is gray & shows nodules.
The yellow loess is found only on
very top & probably is not over 3
ft. thick in thickest place.

It has many small nodules.

At time of leaving 1695 was
reading on top of this hill in road.

Cut 11 On E. slope of some ridge
drift appears below.

Cut 12 In S.E. $\frac{1}{4}$ 11-80-36 a hill
(top = 1704), rather long,
shows red clayey ferretts +
above is yellow loess with some
nodules. Saw no fossils.

Bottom at sec. ^{S.E. cor. 11.} cor. W. = 1659

Cut 13 In S.E. SW. 12-80-36 a
hill reading 1757. shows on face
to W. Kansan drift with rusty band
above, a distinct blue loess with
iron tubes, & this passes by
oxidized band into yellow loess.

March 13 1915

CR. 9.1.1. 225

with attention

with many small nodules at
top & few small ones below &
faintly scattered through
yellow loess some $\frac{1}{3}$ or more of way
down hill.

cut 14 In Le Roy Twp. N. side of sec. 18 - in
center of 12 40 zone E is a shelf
or bench of Kansan, reading 1735.
The hill then rises to 1774 &
shows yellow loess on top. It is
evident that drift rises even
above 1735 ft. so that loess
must be thin.

This is a great ridge running
somewhat NE & SW, which is
evidently the divide.

cut 15 Near NE cor. NE. SE sec. 12-80-36
The slope facing S. shows much drift, &
a thin cap of yellow loess.

cut 16 On the N. slope of same ridge
yellow loess appears at top, then

strongly oxidized band, then gray loess,
at SE. cor sec. 1-80-36 = 1770

This is on divide which here

cut 17 runs NW. face W.
cut 18 - faces drift & thin loess. face W.
just S. of SE. cor sec. 2-80-36
a well 40 ft deep -

near Ocheltree's place.

struck lighter vein of clay only,
water stands about 6 or 8 ft.

On point of ridge SE. another
well is 39 ft. deep & stands
almost full. Here they
struck a sandy soil.

On these broad ridges shallow
wells are common.

As a rule they bore here 40
to 70 ft. and find plenty of
water. A little sand or lighter
vein, but that is all.

The son J.W. Ocheltree, does
well-digging. Only two wells,
one 60 & other 70 ft., are
over 50 ft.

March 13 1895

CR. 100. 1. 2. 3. 4.

with attention.

On lower ground, 25 to 30 ft.
He has dug from Gutterman Co
to Shelby.

cut 19 Near SW cor. SW. SE 2-80-36
a slope facing E. shows drift
well up, then a band of gray ls.,
about 1 ft.; with iron tubes,
a then a cap of yellow - thin.

cut 20 N. of SW cor. of sec. 2-80-36
a rather sharp ridge extends
to west. Its S. side shows
only yellow loam. Top = 1738
The N. slope is quite steep.

at very top a fine yellow
sand (some of it with small
nodules) caps the ridge.

About 10 ft from top yellow
loam is exposed at
12-14 ft a very distinct layer
of gray loam with tubes.

Took sample of sandy part from
top & yellow loam 10 ft below top.
Below gray loam is a clayey
reddish-brown, & Kansan drift
below that.

1659 = foot of hill N.

Down along road fine sand
is washed out. From Kansan?

cut 21 - Wide No. 4-35-81-36. Kansan & Gen.

At Shaver's, in kitchen
reading = 1720 at 9 pm.

April 13 1895

CR 1000 1225

with attention

cut 174 - Drift below (partly covered by loess fill); clay loam with tubes; yellow loam.
 cut 175 - faces N. yellow loam.
 cut 176 - Loess sand 1/2 way up hill. Then yellow loam. Exposure not clear. In valley N. there is loess sand.

Aug. 31, 1913 Sun

Reading in Shaver's Kitchen - 1638

cut 172

At NW cor sec. 13, on slope facing S. drift shows up to 1660 & then yellow loam to top - 1674.

On hill E. Helianthus grounds is growing near top of hill on prairie bank.

cut 173 SW 1/4 SE 1/4 12-81-37 - a slope facing N. shows yellow loam above drift below

cut 22 (and)

cut 172 SW cor sec. 4-81-36 there is a long slope which rises Westward beyond the N.V.S. sec. line & in there capped with yellow loam.

Set 22 on slope

35 yds E. of sec. line there is a bench and here, in gutter on

Looking S. 95 yds

1641

E

N. side, gray loam appears & extends some for 95 yds.

The gutter exposes 1-3 feet of it & shows that, especially on upper slope

it has very many very large iron tubes & few irregular nodules (see spec.). In the lower half of slope I found a few fossils scattered in blue loam.

Upward on slope a very distinct oxidized band, 4-6 in wide appears & runs with slope. Over this the yellow loam comes to traces for some distance down slope. The line is here very sharp.

No drift appears.

I could see neither fossils nor nodules in yellow.

On S. side toward base fossils appear & irregular lime nodules are very abundant near top, in blue loam.

(and)
 cut 22 A drift ridge - rather low.

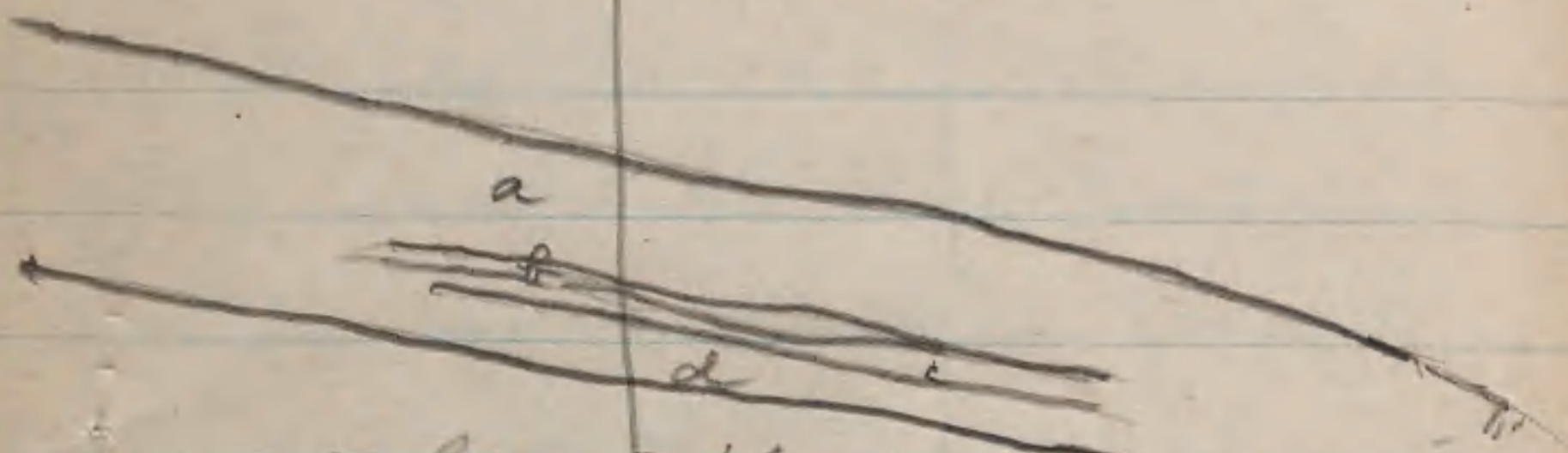
Map 1374

CR 100-1225

with attention

cut 24 (and) yellow loess; gray streak; little drift at base.
 cut 25 (") Drift at base; yellow loess. Faces W.
 cut 26 (") Faces W. Drift; loess cap.
 cut 27 (") similar
 cut 28 (") a long hill with yellow loess all the way.

cut 29 (and) at cemetery W. of road to May
 on N. & S. line, facing S. there is a long
 cut - 4-6 ft deep which shows (on
 N. side);



a = yellow loess - 3 ft, with many small
 b = gray loess - 3 in to ^{modules} more up the hill
 similar.

c - a clayey ferrite 6 in - 1 ft.
 d - reddish drift, bluish like
 lower.

Photograph this in
 afternoon or early
 morning.

The gray runs out below & yellow
 loess thins.

Kitchen 1672 - at 4:30 PM

cut 30 (and) Faces S. Gray loess with tubes,
 and many nodules. Yellow loess
 follows hill.

(and)
 cut 31 - Drift well up. Gray loess (thin);
 yellow loess.

cut 32 (and) yellow loess; gray streak.

cut 33 (and) Drift; yellow loess.

cut 34 (and) Drift up to 16/0. Red
 clayey ferrite very distinct; then
 gray streak; upper part yellow loess,
 on slope with many nodules. Top = 1645.

Kitchen 1672 - at 4:30 PM
 CR 100 - 1225
 with attention

Sep. 1-1913 - Mon.

Shasen's kitchen 1554

Trip to Defiance.

Butna - 1438 - C. W. W. depot

1440 - C. E. W. "

Made drift in
cut 172 run up
to 1565 ft
top of hill = 1588 ft
River bottom in
sec. 2 = 1442

Cut 180

7 acres E. High hill
The loess on hill at W. end
yellow loess in cut 5-6 ft. all along.
between sec. 2 & 11 seems to be

quite thick, - 4 to 6 feet are
exposed, but the hill is made

all the way down. Top of road = 1539 ft. Hill rises 20 ft more

Cut 181

7 acres W. The part facing W. is similar
Cut 182 Shows yellow loess on slope facing N. Here comes all else.

Cut 183

On W. side, along road on W.
side of sec. 3. The yellow loess is
similarity thick on all the hills & shows
in sections. Faces S. yellow loess only.

Cut 184 E. of middle of line between 4 & 9,

81-38, a brown loess shows drift.
Cut 185 Shows yellow loess.

At school house E. the loess is

still thick.
Cut 186 7 acres W. & shows yellow loess.

Top of hill at 1570 has some
oaks & another patch west

The slope E. shows heavy yellow
loess all way down, (= 185).

Cut 177

On slope facing E. along Long Branch,
drift shows well up. Yellow loess above

Sep. 1-1913

Cut 178 faces N. It shows both gray &
yellow loess.

Cut 179 Is in row on low ridge & shows
practically only drift.

Vertical 1375

CR 9.0 1375

with attention.

Cut 186.

On W. face of same ridge
drift appears at base. (= 185a)

Next ridge, slope facing E.,
a short distance W. shows drift
well up, a gray streak & a

cut of yellow loess, much less than
before.

This is only weathered, it is yellow, a gray streak below.
Gray loess will exposure well down
on slope, about 3 ft exposure on N.
side. Rest overgrown.

This cut runs 7-8 ft.

(On S. side Sec of 4-81-37)

Fossils are scattered through lower
part of yellow, not many.
Rostels are mostly rounded
& within loess, but many
smaller ones appear near top
of ridge. (See yellow loess & nodules
& shells)

Loess sand appears in low ground near W. cor. 7-81-37.

Sec 187 - Shows yellow loess

Cut 188 - Shows drift & much yellow loess.

Cut 189 - A drift ridge.

Cut 190 Drift; ferrillite (clayey); gray loess; yellow

loess well down. Loess higher to N.
Hills along E. side of sec. 12 & 13 show much loess (yellow)
Cut 191 - Drift high up, & yellow loess.
Cut 192 - Drift high up, & yellow loess.
A small cut shows drift (loess).

Cut 193. N. line of W. W. 23-81-38.

1/3 of way up on N. side
Slope facing E.



Cut 193 (a) Faces W. shows gray & reddish mud.

W. cor. 1375

CR. 4.0. 1. 2. 5

with attention.

cut 194 - Drift. Red much! Faces E.

cut 195 - Faces W. Drift well up. On top material is
reddish & crumbly.

cut 196

W. of N.E. on 22-81-38 - a
steep hill runs up - faces E.

Its lower half is drift, then a
ferretto belt, then gray, narrow,
& above, yellow.

This is on N. line N.E. 22-81-38.

The ferretto belt is very distinct -
pebbly. The gray streak is
narrow & indistinct.

The material above is yellow
loam & its lower part has fossils
& scattered nodules. (see center
of loam & fossils.)

See 2 pp
in advance

cut 204

Near center of N. line of N.E., NE
21-81-38 a slope facing E.

shows a good exposure of gray
loam - here heavy & crumbly, but
with fossils scattered through, - some
nodules & tubes & streaks.

See loam & fossils.

Among scruboaks on N. line NW.

21-81-36, found a good many *Bifidaria*
holysensis

Just W. of this a steep slope facing
W. with yellow cut above 5-7 ft
& gray, with tubes, below.

Sta. at Defiance = 1464

Base of big cut 5. = 1500
= 1510

Went to big cut (2nd cut) I on
RR. Collected fossils in gray loam.

The fossils in gray were collected
chiefly between 200 yds & 275
yds from N. (E) end of cut

Station 1375

CR 9.00 1325

with attention.

cut 217

The 2nd cut is the larger one, it measures about 400 yds. in length, & is made across a long ridge, so that both sides are about the same. The west side is a cleaner cut, however, and most of the work was done on that side.

at B.

Base = 1336

Top of Kansan = 1351

Top of gray loess = 1365

Top of bank = 1379

Highest part = 1382

Where Kansan is highest 1381

at A - Top = 1359

Base = 1336

23 ft

Top of gray loess, highest part = 1354

Top of Kansan = 1345

at Base 1338

cut 217

2nd cut, W. side

total height 43 ft (measured)

at A

Base = 23

Photos 5-6

15-16

show part with markers - from phosphate lands

From thin C. in cleared part

1381 Highest part of Kansan

1382

27 ft

Gray

15 ft

300 yds

70 yds

40 yds

at A - Kansan = about 6 ft

b = Ferrous clay = about 2 ft shade into drift, becomes tan below

c = Chert layer = about 2 ft - shades into b -

d = gray loess = 2 ft - streaked with bluish - shaded out of from view by a chert band 2 or 3 in wide,

e = yellow loess = 12 ft. Full of fine & irregular nodules

at B - a = 15 - Red + yellow with blue fine - much here

b = 2 - prominent, crumbly - shades into c & d - more the latter

c = 2 - dark, streaked with d, but sharp

d = 10 - gray, clayey, abundant from c

e = 11 - blue, sandy, from c, brown, clayey, from d, greenish, from e

f = 3 - top of Kansan, brown, clayey, from e

at C - 137 ft

CR 1.0 - 1325

with attention

The yellow loess has dark brown spots & streaks, & some gray streaks.

Transition to gray at roadside is not so sharp. Though quite abrupt, but at S. end it is very sharp.

The yellow loess has fewer fossils, & the *Alveolites* & *S. arana* predominate. The former is very rare in gray loess.

Cut 1 is evidently same as upper, yellow, loess in cut 2.

Took photos 5, 6, 15 & 16 with markers & 33 & 34 showing cut looking N.

all samples are from near B.

at 218

The 3rd cut follows 2nd closely.

It is about like 1st

I could see only yellow loess. Badly stratified base.

at 219

The 4th cut, just beyond angle of road, is similar to 1st on W. side. E. side is smaller.

Only yellow loess shown (about 15 ft.), with large round nodules & fossils scattered through, -

not abundant. See fossils on W. side = 12 ft. deep. On E. side = 6 ft. Many nodules, few fossils.

at 220

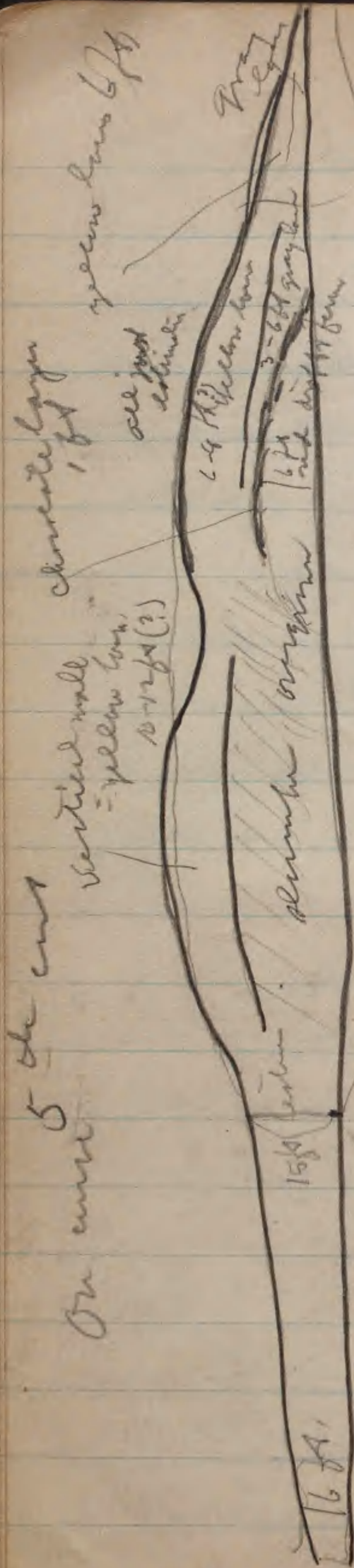
Cut 5 is long, on curve, & much steeper.

at 218 1375

at 219 1325

with attention.

On curve 5th cut

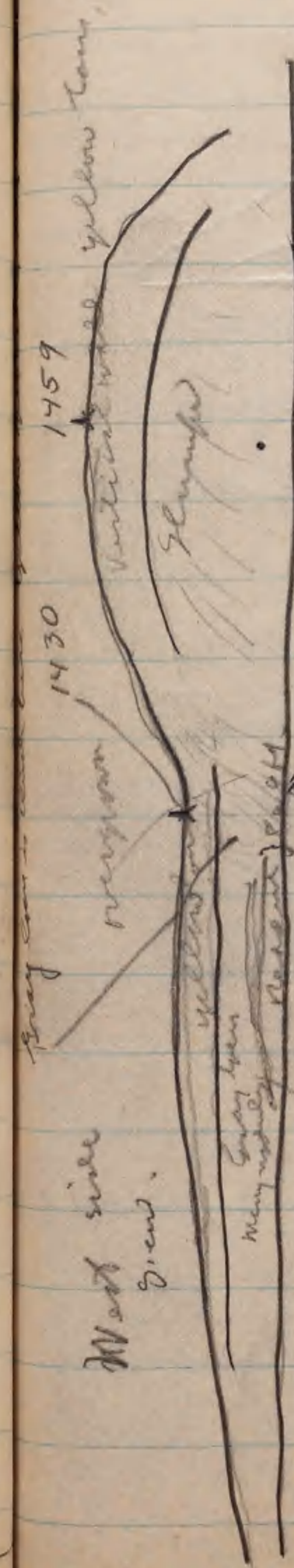


160 yds This is a cut across a long nose.

560 yds.

At 5. cut on both sides at least 6 ft of gray clay in exposure. It shows cleavage, color, iron tubes, numerous rounded or irregular pebbles large nodules, a few fossils, scattered chondritic layers below is very distinct. This is in lower part of cut at 3. cut the red ferruginous also appears - most of upper shown.

West side of cut.



Chondritic 1403

chondritic layer everywhere distinct (by digging)

Everywhere in all these cuts a brown siliceous soil layer is 1 or 2 ft thick

The gray & yellow loams are quite sharply defined. The yellow, the dark brown nodules & some gray streaks & a few rounded nodules. The gray loam has root tubes & many rounded & irregular nodules, white large

Main part of cut is badly slumped. In these sand nodules? RR co. fossils including nodules of 12 x 4 in both sides along track.

The big part of cut shows much of the clay ferruginous - seems to be almost 1/2 cut (?)

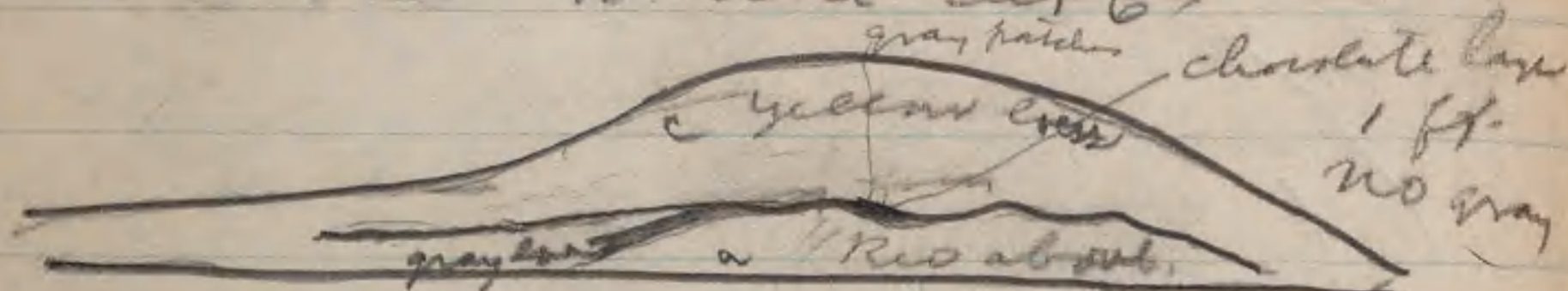
1402 1375

CR 1.0.0 1325

with attention.

cut 221

Cut 6 - is about 300 yds long.
At N. end of W. side yellow loess
rests on chocolate layer. Same on E. side.
N. side cut 6



at E. end on E. side from top
gray loess with tubes & mud
nodules in exposure about 6 ft
& above it is 8-10 ft. of yellow
loess. Line sharp, oxidized.
Saw no fossils in yellow part here.

N. side a - heavy muddy brown bubble.
Reddish above. 7 ft. thick

Base - 1403

Top of Red band (chocolate) 1412

Top of gray loess

Top of bank - 1439

(The cut on S. side looks similar)

The gray loess runs out - very distinct.

The chocolate layer follows surface of drift.

The gray appears in patches on N. side, - not thick.

Yellow loess - 27 ft. thick - fine round nodules,
fossils (few) scattered, - chiefly below.

About 3 narrow smaller cuts

appear in sec. 33 towards

Eastling, but they will be better

studied when new cuts are
made. The same will
be true of cuts 5 & 6.

On this trip I saw, in low ground,

Prickles chrysanthemum

Salix amygdaloides

Scirpus (big ones like *strepitans*)

Helianthus grosseserratus

Echinochloa crusgalli var.

Sagittaria latifolia

Asclepias incarnata

Lobelia siphilitica

On return

1380 = base of cut 2

Sketch 1375

CR 1.0. 1325

with attention.

Roadsides
R.R.
Gardens.

Corn fields
Grain fields

Pastures
Lawns.

Office of hotel 1296
CR 9 & P. 1235
On return 1283

On Prairie Ridge along RR

<i>Sorghastrum nutans</i>	<i>Eriogonum canadense</i>
<i>Andropogon furcatus</i>	<i>Asclepias verticillata</i>
<i>Euphorbia corollata</i>	" <i>nyctaginia</i>
Road —	<i>Lactuca canadensis</i>
<i>Aster multiflorus</i>	<i>Oenothera biennis</i>
<i>Equisetum hyemale</i>	<i>Grindelia racemosa</i>
<i>Euphorbia preslii</i>	<i>Composita scabra</i>
<i>Achillea millefolium</i>	<i>Cirsium arvense</i>
<i>Oxyria petraea</i>	<i>Eriogonum canadense</i>
<i>Kuhnia eupatorioides</i>	<i>Lactuca canadensis</i>
<i>Aster laevis</i>	<i>Aporosa canadensis</i>
<i>Oxyria petraea</i>	<i>Lactuca - pink fls.</i>
<i>Achillea millefolium</i>	<i>Antennaria plantaginifolia</i>
<i>Hordeum jubatum</i>	" <i>triflorum</i>
<i>Asclepias striata</i>	<i>Aster eximius</i>
<i>Helianthus tuberosus</i>	<i>Polygonum convolvulus</i>

Sep. 3, Wed. 1913

Sep. 4, 1913 Thrus-

drove to Redfield's grove.

Along road noticed weeds:

Abutilon	Polygonum aviculare
Setaria viridis	Zizania
" glauca	
Ambrosia trifida	Lycium arboreum
" artemisiifolia	Panicum capillare
Melilotus alba	(Polygonum pennsylvanicum)
Erigeron canadensis	Convolvulus sp.
Amaranthus retrofractus	Aster trin
Echinoclorus crassifolius	Cassia chamaecrista
Amaranthus blitoides	Asclepias syriaca
Lactuca scariola	Bidens frondosa
Polygonum (large)	

Bottomland pasture

Helianthus annuus

Veronica fasciculata

Polygonum (coarse, see above)

Rumex crispus

Setaria glauca (rare)

Bidens chrysanthemifolia

Ambrosia artemisiifolia

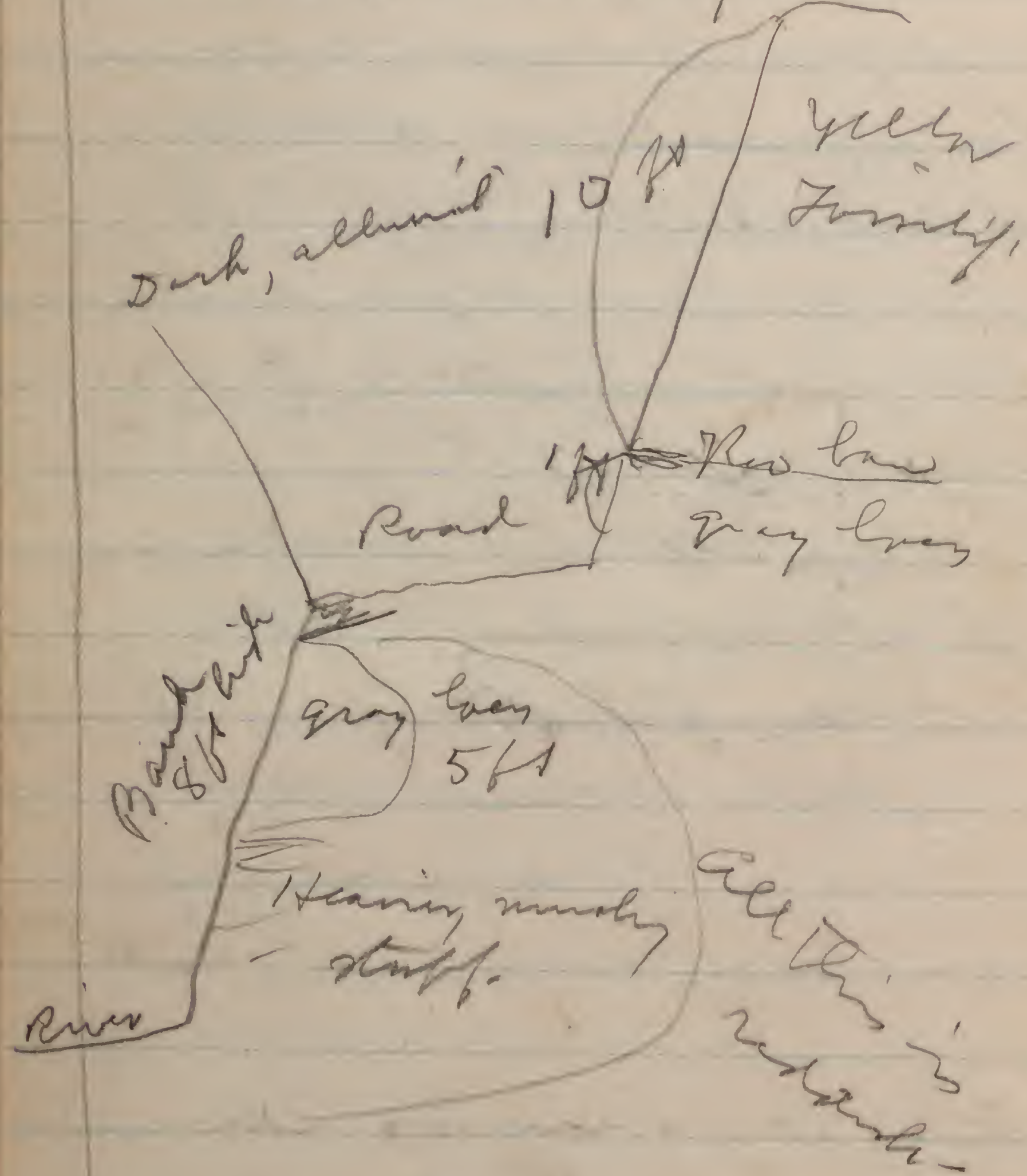
" trifida

Dandelion (white)

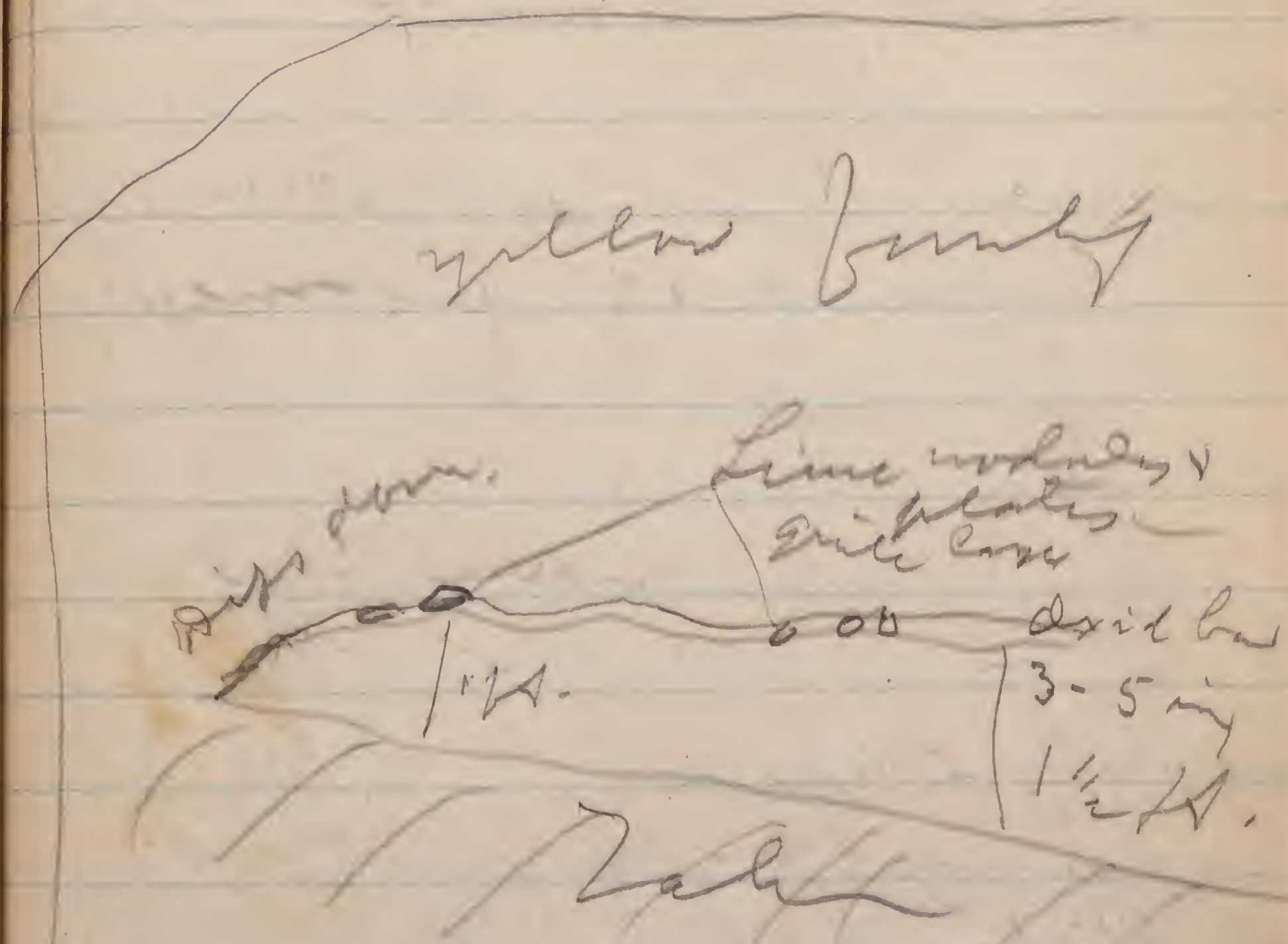
Boltonia glaberrima

Bidens frondosa (common)

Went to cut 3, Redfield
cut. Looking S.



Exp. B



15 & 16 Near White

23 x 24 x 7 in

Took lvs, & acorns & etc. for
bur oak on bottom land
in Redfield's grove.
Tree 14 in diam.

In brush scrub patch 1 1/2
mi. west of Red Butte:

Bur oak & hazel dominants.

Red elm. few & rather small

Am elm. few " " "

Large gray Cornus *Ammophila*
Vitis vulpina

Much blue grass, - other
small plants few, & mostly
prairie. Pastured.

Found *Verticea laevis* most
common, chiefly on lower slopes.

Also two *Zon. arborea*.

Above I found a few
Verticea, a *Helicodonta* &
Bipidaria holzingeri.

Took two liches which
appear to be common in
all the scrub oak patches.

In afternoon drove SW. along
C. & N. W.

RR = 1432

at cut 91

RR = 1445

Cut 222

91c - 300 yds long 7-8 ft deep. RR runs out
on plateau & the
they run out.

Cut 223

91b is 150 yds long, 10 ft deep.

167 mile post is 50 yds from SW.

This is yellow loess with brown
black spots & streaks. No

fossils & no nodules. (think shell)

Took sample 7 ft from top

a dark soil line 1-2 ft - shades down.

Creek valley comes between 91b & 91a.

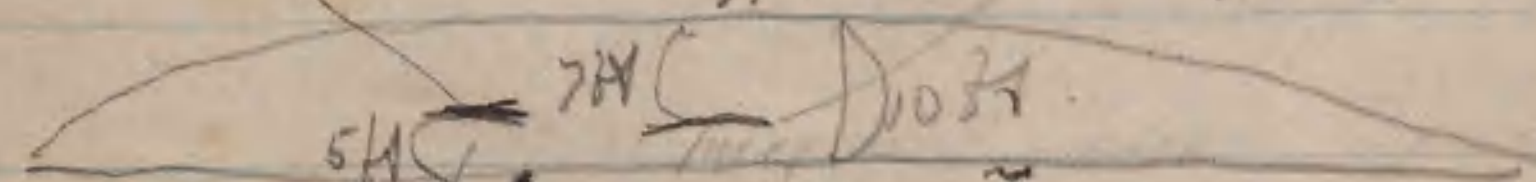
Cut 224

91a Cut 150 yds. long - about 10 ft

deep - Fossils, gray loess, 5 mi

from

91a oxidized



Typical gray loess with iron tubes,
a few nodules & a few fossils.
Shows sharp oxidized line about
1-2 in wide & this is about 7 ft

above RR

Took samples of yellow & gray loess
no fossils or nodules in yellow
soil band again

Cut 91- Top 14'5" 2
RR 14'3" 5

The S. E. side of cut is better
in all these places.

The yellow lichen is probably
nowhere over 8 ft deep, but
slumping & overgrowing make it
hard to see.



5-6 yrs
The yellow part is organic material & a bridge over
caverns with plants. Lime is seen darker than as a
As to the writings
See Journals

found the gray loam on N. side also - and ^(N.E.) bridge -
shows well up -

22

Cut 90 is a net of double cut. S. part 50 yds. long 6 ft. deep.

Gray lvs in exposed (about
3-4 ft) oxidized line distinct
or yellow) & few rhiz., in soil

x tubes appear in the east part. Nodules rare numerous in S/p

W. side 50 yds. 150 yds. + low part makes it 200 yds.

yellow in main part probably
not over 7 ft. Gray, ex-
posed to 10 or 12 ft, but base
covered with talus. See fossils
from gray of both parts.

Waters better in main part

Cut 89 extends 6 pole lengths
(= 360 yds) W. of road, & 3
poles E. (= 150 yds)

It is ragged, cut out in back,
✓ badly shrunken.

1457. Top of back end
 1422 base

S. side 89

Road

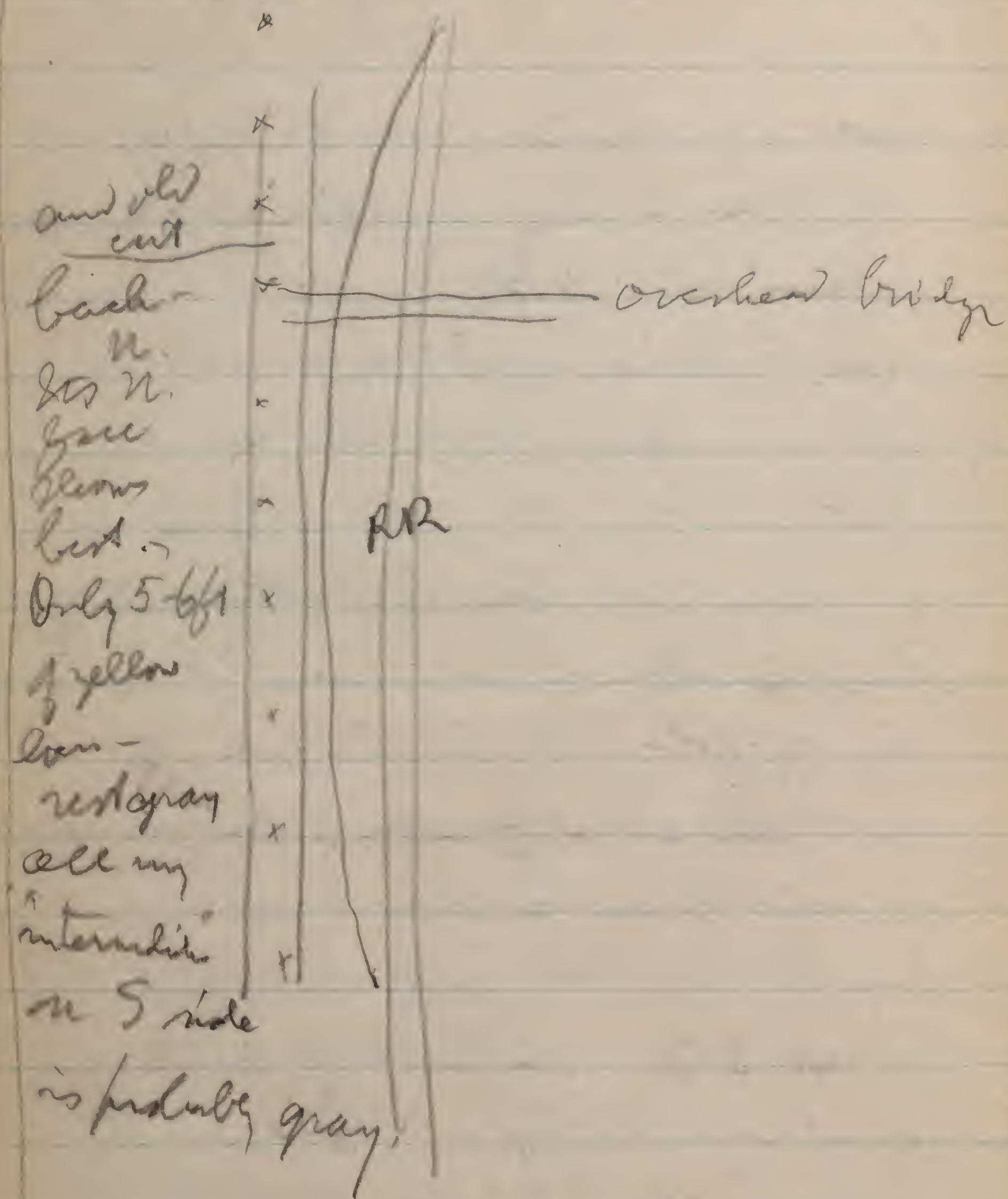
Inok sample
 yellow
 brown
 oxides
 gray to 10 ft

Gray, has a good many large, round (some irregular) nodules, & a good many tubes - some chondrite streaks, & rusty parts (slightly).
 The yellow is little of gray stone vertically. Most of gray oblique.

1422
 yellow
 gray

Red & a transition. This is like a yellowish gray hemi-crystalline. Bedded structure.

1457. Top N of back end
1422 base



The E. end of S. side looks as if
gray loam came up ^{within} 3-5 ft
of top. It stands nearly
vertically (the yellow part of
gray)

50 yds between cut 88 & 89

Cut 88 is badly damaged
& irregular. About 150 yds
long & 14 ft deep
On N. side 6 ft yellow loam;
lime under that, & 6
ft gray loam & talus
On S. side gray loam up
to 12 ft & then 4-5 ft
yellow, which gets
thicker towards higher part
of cut E.

Cut 82 is just E. of 40 line
E. of cut 83 (about 350
yds between cuts)
Cut about 350 yds long,
18 ft (3) deep
at W end only 3-5 ft yellow
loam - lime found
Gray runs up to 8 ft at
this end

at 2nd hole from W. end found
in way, 8 ft of yellow &
1 1/2 ft of gray.

Cut 225

at 3 1/2 to 6 poles a
cut 10+ ft on N side.

Probably too gray.

Lower down lower than present
grade.

11 poles from this cut to
cut 81. ~~30-40~~ 1/2 deep.

Gray loam away up.

Many nodules. Some tubes

saw no shells, too dark.

A heavy clink smelly
lumpy stuff at beach

level - not loam.

It is 450 yds long.

This is a fine large cut,
and should be studied ^{more fully}, It
was too dark for this

along road to cut 83
at cut 85 I found
gray loam, with iron
tubes, and a few
fossils, mostly true
ovoids.

Sep. 5, 1913 - Fri.
Went out to look for
weeds.

Reading at hotel = 1300

Weeds along streets of Harlem:

Zoroxum sp.	Erigeron canadensis
Polygonum arvense	Polygonum pennsylvanicum
Panicum capillare	Rumex crispus
Setaria glauca	Setaria viridis
Amaranthus blitoides	Platanus major
" retrofractum	Melilotus alba
Chenopodium album	Setaria viridis
Ambrosia artemisiifolia	Lepidium virginicum
Belamcanda chinensis	Burdock
Lactuca scariola	Hordeum jubatum
" " var.	Setaria verticillata
Rumex (sp.)	Urtica dioica
" crispus	Bidens frondosa
Sisyrinchium angustifolium	Eragrostis major
Ambrosia trifida	Sisyrinchium officinale
Convolvulus sepium	Asclepias syriaca
Portulaca oleraceae	Urtica dioica
Polygonum convolvulus	(my fine grass)
	Asclepias syriaca
	Erigeron canadensis
	Polygonum pennsylvanicum
	Polygonum convolvulus
	Panicum capillare
	Chenopodium (var.)
	Polygonum (coarse same as red top)
	Salicaria halsii var.
	Polygonum aviculare
	Rumex (var.)

In one place a great deal of
dandelions just outside of curb line.
The lawn fairly clean.

Along RR. from:

Ambrosia trifida	Bromus inermis
" " var.	" arvensis
" artemisiifolia	Amaranthus (var. slender)
Melilotus alba	Sporobolus vagans
Urtica dioica	Convolvulus sepium
Zoroxum sp.	Setaria
Bidens frondosa	Helianthus annuus
Convolvulus sepium	Cirsium discolor
Euphorbia (var.)	Abutilon theophrasti
Amaranthus retrofractum	Portulaca oleraceae
" blitoides	Hordeum jubatum
Zoroxum sp.	
" " var.	
Setaria viridis	
" glauca	
Dracopis sanguinalis	
(my fine grass)	
Eclipta alba var. pallida	
Asclepias syriaca	
Erigeron canadensis	
Polygonum pennsylvanicum	
Polygonum convolvulus	
Panicum capillare	
Chenopodium (var.)	
Polygonum (coarse same as red top)	
Salicaria halsii var.	
Polygonum aviculare	
Rumex (var.)	

CR I + P. depot = 1244

C. Gr. W. " = 1253

(Hills) 1284

Hotel on return 1290

Not satisfactory for structure,

Catalpa

Box elder,

green ash (and many)

Soft maple

Alder (look thin)

Hard maple (green both sides)

Scotch Pine

American Pine

Larch

Cedar

White Birch

Mountain Spruce

Mr. Wm. Sorensen - married

Mr. Sorensen's business

yellow - runs out N,

but E. ~~run out~~ fast.

as much as

gray trees -

Top clay all told 30 ft.

Some hard brown

stuff (charcoal like)

and lower.

Blue joint clay

(in places, red)

Then sand, with water

Sep. 6, 1913 - Sat.

On way to Anderson on
main long rd.

<i>Helianthus grosseserratus</i>	<i>Cirsium discolor</i>
<i>Lepachys pinnata</i>	<i>Aurethra canescens</i>
<i>Aster v. exiguus</i>	<i>Lactuca scariola</i>
<i>" novae-angliae</i>	<i>Helianthus annuus</i>
<i>Achillea millefolium</i>	<i>Lactuca scariola</i>
<i>" artemisiifolia</i>	<i>Achillea millefolium</i>
<i>Asteris latifolia</i>	<i>Convolvulus sepium</i>
<i>Erysimum canadense</i>	<i>Erigeron canadensis</i>
<i>Euphorbia corollata</i>	<i>Rosa pratincola</i>
<i>Veronica novae-angliae</i>	<i>Oxycoccus</i>
<i>Desmodium canadense</i>	<i>Urtica dioica</i>
<i>Helianthus scaberrimus</i>	<i>Lactuca canadensis</i>
<i>Solidago canadensis</i>	<i>Helianthus scaberrimus</i>
<i>Althaea rosea</i>	<i>Silene purpurea</i> (var.)
<i>Agropyron tenerum</i>	<i>Gaura biennis</i> (rather low)
<i>Brassica</i>	<i>Rumex crispus</i>
<i>Sisymbrium officinalis</i>	<i>Sisymbrium officinalis</i>
<i>Lactuca fulva</i>	<i>Astragalus canadensis</i>
<i>Helianthus tuberosus</i>	<i>Opuntia</i>
<i>Dysosma</i>	<i>Monarda mollis</i>
<i>Asclepias tuberosa</i>	<i>Aster multiflorus</i> (very little)
<i>Helianthus annuus</i>	<i>Aster multiflorus</i>
<i>Ceanothus</i>	<i>Scilla maritima</i>
<i>Sedum spectabile</i> var.	<i>Cypripedium</i>
<i>Thalictrum</i>	<i>Ornithoglossum umbellatum</i>
<i>Rhynchospora</i>	<i>Acorus</i> (very narrow leaf)

Cassia chamaecrista
Plantula arguta
Salix humilis

Potentilla canadensis
Seppia perfoliata

Low ground

Aster multiflorus
Aster - white - border
Cicuta maculata
Colinus calva (very common)
Spartina patens
Helianthus grosseserratus
Accumbens
Salix glabra
Sagittaria latifolia
Veronica hastata
Bidens cernua
Rubus laciniatus
Physalis composita
Salix longifolia

Weeds

Polygonum arvense	Amaranthus retrofractus
Hordeum jubatum	Polygonum convolvulus
Polygonum pennsylvanicum	Rosa blanda
Amaranthus blitoides	Rosa carolina
Plantago major	Urtica dioica
Amaranthus acanthopetalus	Echinochloa crusgalli
Conyza canadensis	
Echinochloa crusgalli	

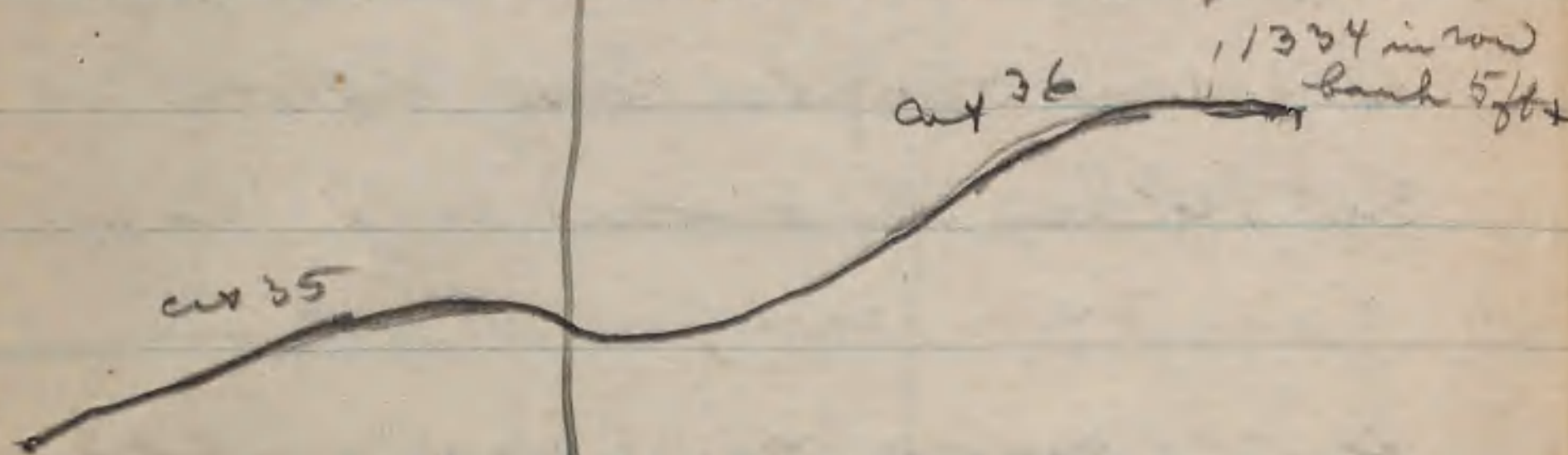
Sep. 7, 1913 Sunday
1267 = CR D & P. depot at Audubon.

At cut 35, just N. of R.R. N. of Audubon, there is a rather long hill facing S. It shows drift clearly on lower slope, - small boulders. At top there is a cut about 9 ft. deep. It shows gray loess with tubes (noting no fossils or nodules up to within about 3 ft of top, & there the heavy, brownish layer tops it. Of the gray loess there seem to be only about 2 ft & below that, ^{there is} drift, oxidized above, & with sand streaks.

The drift is a good joint clay, much of it yellow, with blue (light) streaks, beds & interbedding, & it has large pebbles & small boulders. Very calcareous.

Cut 36 - Top of hill = 1334

This is on the next hill, also sloping S., of which 35 is practically a continuation with an interruption.



In cut 36 - which runs up to about 8 ft., drift is exposed quite to top of hill, & has a covering of 2 or 3 ft. of heavy, yellow, loam-like stuff (see sample). Took it from near top of hill, and 1 ft. below top of bank.

Cut 37 faces E. & shows red penitence well up & a cap of yellow loam - not thick.

Cut 38 shows yellow loam all the way up.
Top of hill = 1360

Cut 39 is on a low ridge, runs over top, & on S. side shows drift well up & a cap of the yellow stuff.
Cut 40, 3 or 4 ft. deep.

Cut 40 is just a low ridge with drift exposed on road to top.

Cut 41 faces N. & is just a part of slope. It shows much gray in road, & yellow drift towards base.

Cut 42 is on steeper hill facing S. (top = 1400). It shows drift with small boulders (one of 200 lb. about 4 ft. long,) well up hill, almost to top, & then a gray streak & the top yellow.

Cut 43 - faces N. Shows drift well up, then gray streak & little cap of yellow.

Cut 44 - faces S. A gentle slope. Shows drift well up. Then about 1 ft. of gray, with iron tubes, is exposed in gutter on N. side. Then yellow - a little.

Cut 45 - On a long gentle slope facing N. Gutter & bank on E. side show reddish drift with

a large granite boulder.

The gray streak & a little drift appear at various points along the road which I travel today. I note only the more striking slopes.

Cut 46 on long slope facing S.

Largely orange. Shows drift at foot, gray streak & yellow top. Top of hill = 1388

In S. part Canyon top. collect *Sorghastrum nutans*, a fine grass & two *Lactuca*, 1 pink & 1 yellow.

Cut 47 is on slope facing E. It shows 1-3 ft. of yellow loamy stuff.

Cut 48 is a long slope facing S.

It shows no gravel & pebbly drift for some distance up the slope & this is mantled with a thin layer of yellow.

Encountered several places where the top of hill had been cut out, & in one place they were heaped up more while

47
"fixing" the road. The sides are cut.

Cut 49 $\frac{3}{4}$ way up hill a thin gray layer shows. Above it yellow loam - at = 4-5 ft. Then below, drift 1298 = RR at gray

Drove to Cemetery W. of Gray to cut 39

Near S. end of cut, in gutter, about 2-3 ft. of a heavy gray joint clay,

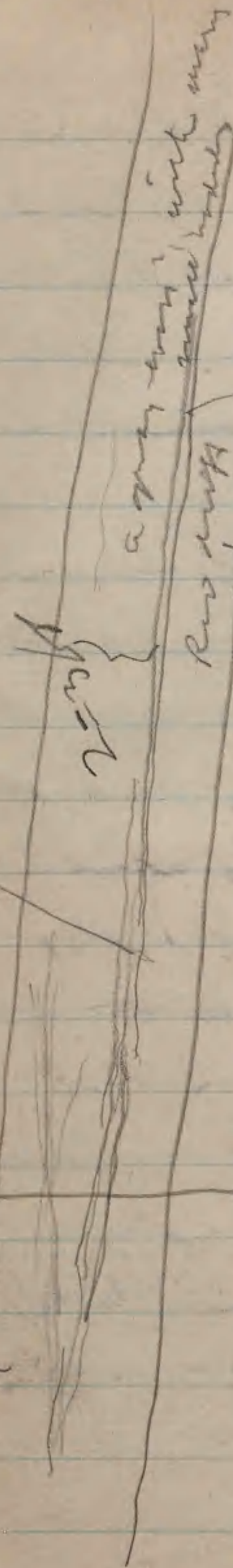
with pebbles, appears under 4-5 ft. of reddish pebbly drift with small boulders. (See sample of each.)

At about 1350 a gray loam begins to appear.

(Copied on p. 16.
of loose leaf note book)

green 3-5 ft

Forams part of gray layer



gray layer 3-6 in thick exposed

At about 1363 a real, fossiliferous gray loam with larger nodules & irregular nodules appears, 2-3 ft. Forams for about 50 ft. The forams & large nodules seem to change in the lower 2 ft. of the gray. The upper part has small nodules near top. The lower thickness of gray is at least 5 ft.

The gray very distinctly becomes content of shell - note sampled foraminifera

1 ft. of hill yellow loam appear over gray & the latter thin out. There is here a distinct chert layer under gray (in upper slope). Small nodules appear in yellow, not very abundant.

The very top = 1373 and only 1 ft. then gentle slope for about 235 yds. Along this are 1-2 ft. and + small boulders are strewn in road & gutter along dirt not far away.

At this 235 ft a little gray loam appears, with tubers. Reading at 235 = 1375 then for 91 ft. and is about 3 to 4 ft, but only lower ft. shows in gutter & this shows red drift all the way. The total loam

Thickness is less than 4 ft.

Reading at this point = 1368

At 15 more to fossiliferous gray
lapis. It runs up hill as
a gray bar layer then 1 ft thick
& 2½ - 3 ft of yellow m. is.

Chocolate Cases shown mounted
at en of 15 pts reading - 1865

For about 17 yds gray beneath
your shoes - Reading = 1360

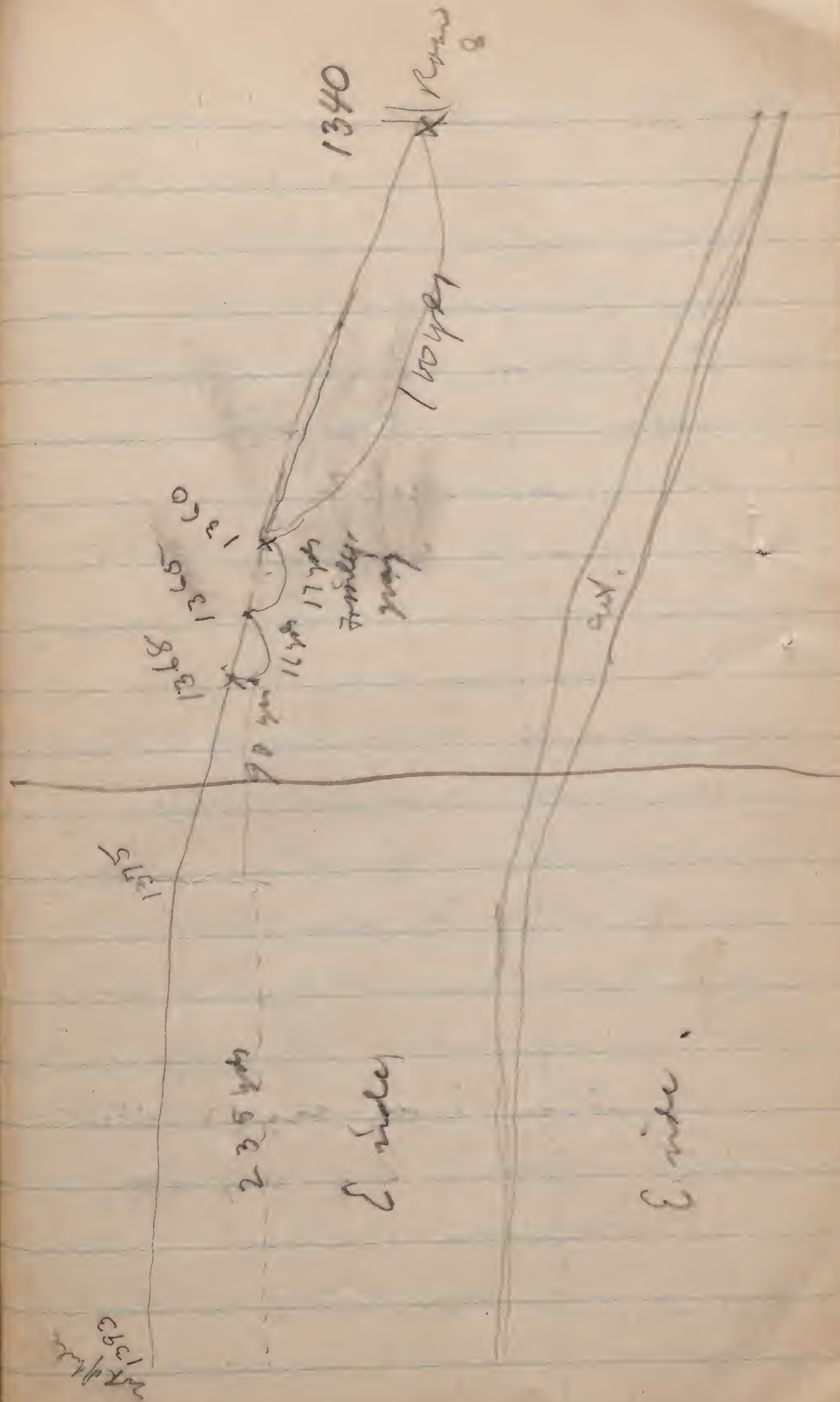
about 100 yds more to N. side
of road. Reading = 1340

This is not yet covered place.

Lowell Cotton 2 - 13/8

Drift shown along E. road.

1305 = RR at Gray at 1:30 PM



Cut 50 faces W. & is along slope of
high hill. It shows yellow loam
all the way as far as I could see.
Not a deep cut.

Cut 51 faces E. Shows Kansas
 $\frac{1}{3}$ way up, then gray streak &
finely yellow.

Cut 52 faces E. It shows 5-6 ft. of
yellow loam in cut at top & sides (gullies)
near base show gray loam.

Cut 53 faces W. It is on rather low
ridge & its lower part shows
drift. Then a ferrite, & then
in bank on N. side a belt of
gray loam (with tubes) showing
at least 2 ft. Then yellow on top.

Cut 54 shows ^{faces E.} gray streak & yellow loam

Cut 55 faces E. Drift at base.
Loam above (yellow)

Cut 56 shows drift well up to
intersection. gray streak at intersection &
a little yellow loam on top of bank.
Red ferrite also shows.

about 3 ft of yellow loam exposed
in bank S. of cross-road.

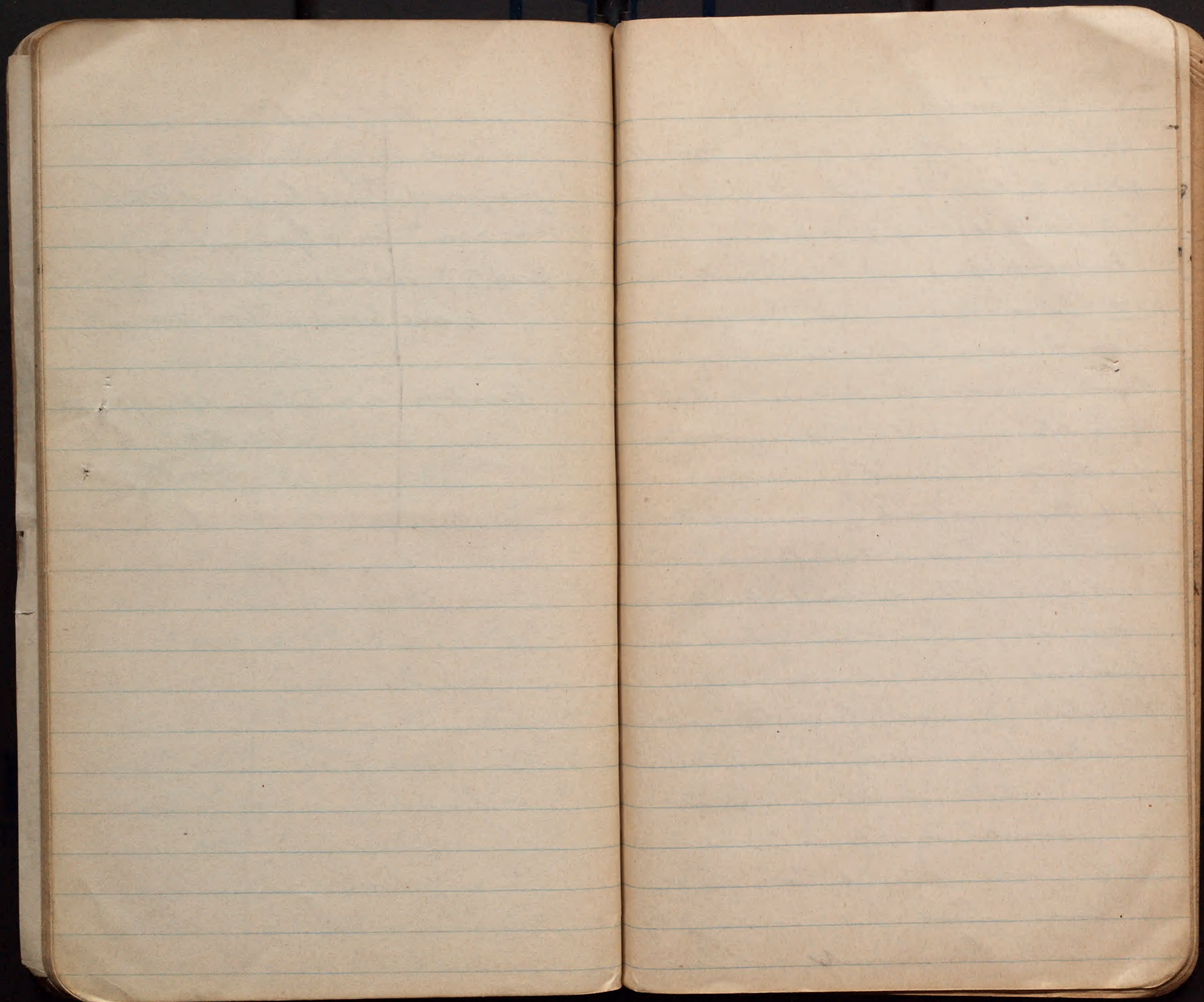
Gray is distinct but not thick.
Has iron tubes & ferrite nodules.

Cut 57 shows much drift &
some loam on top. Faces S.

Reading on return in hotel office - 1296

At CRIVP. - 1235

On return, office - 1283



Biographical History of
Shelby & Audubon Counties, Iowa. 1889

p. 230 - Geology, Topography & Nat. History
(of Shelby Co.) - pp. 230-231.

Galland's Grove contains "about 1,000 acres."

p. 230 - "It is a prairie country, but does not have the usual characteristics of prairie land, as occasional groves and beautiful streamlets relieve the ordinary monotony of a stretch of prairie."

p. 231 - "These natural groves, planted by Mother Nature, are made up for the most part, of the different species of oak, elm, ash, hickory, black walnut and basswood. There are also many thickets of sumach, hazel, thorn-apple, blackberry, gooseberry and hundred shrubs."

The entire county is supposed by geological experts, to be underlain with a coal deposit, to a greater or lesser extent, but is concealed by the post-tertiary deposits, not less

than 200 feet beneath the surface. The only stone fit for building purposes is the boulder of the drift formation. Future prospecting and delving into the geological strata are quite likely to present a mineral wealth of great financial value. One of the finest features of the natural resources of Shelby County is the excellent quality, as well as quantity, of pure, wholesome water found in its numerous water courses and at easy depths for wells."

First whites (Galland's Grove) 1848. Morning.
"Reorganized Church of Jesus Christ of Latter Day Saints." Council Bluffs was Kanesville.
Saw mills - first at Galland's Grove, now in 1857 in Bowman's Grove.

p. 230 - "bluff deposit"

Andubon

Geology, Topography and General Features

pp. 638.

p. 638 - "The Post-Tertiary formations everywhere occupy the surface. -- The drift deposits are but imperfectly known, appearing only here and there at frequent intervals beneath the more recent bluff formations.

p. 643 - County organized in 1855 and named after John James Audubon.

p. 669 - Rock Island to Andubon in 1878

Trips Planned

Aug. 23 - From Harlan, E. & N. 1 day

" 24 - South - 1 day

- Out from Shelby 1 day.

- Out from Elkhorn 1 day Shelby

(possibly 1 more) 1 day Andubon

- Out from Defiance

To Dunlap 1 day

Return 1 day

Earling to Defiance 1 day

- Out from Protina -

~~Shelby~~ To Kirkman & N. - 1 day

To E. of Kirkman & E. - 1 day

~~Andubon~~ To Fiscus - 1 day

S. E. - 1 day.

- One day at Harlan. 1 day

Brickyard

Bluffs E. side.

- Out from Andubon

SW. 1 day.

SE. 1 "

NE. 1 "

Out from Exira

810.

1 day

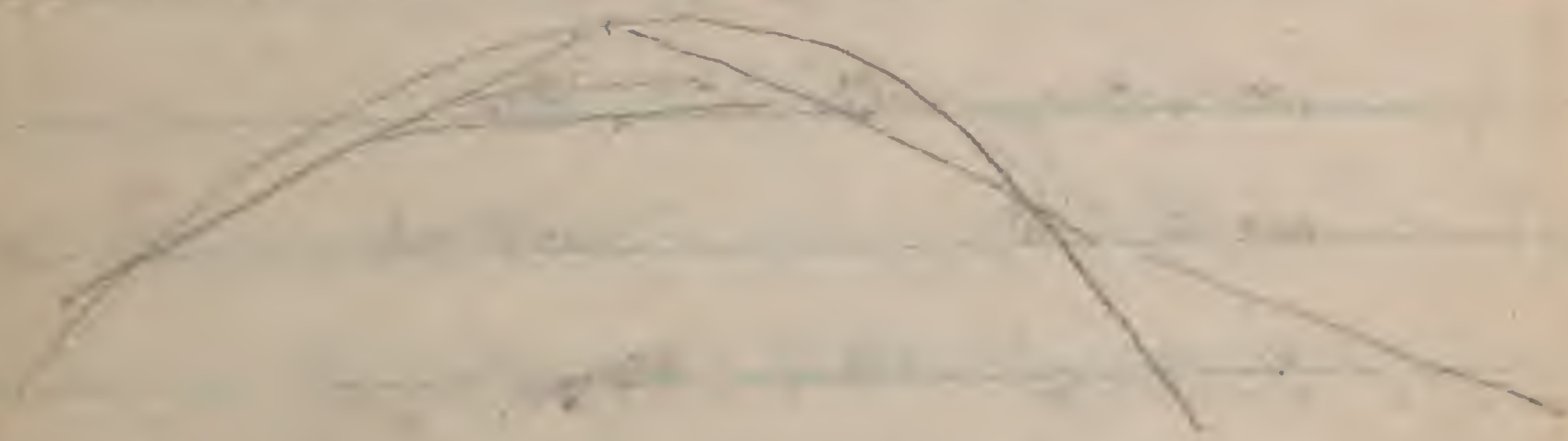
82 -

1 day.

Photos 546 - Scrub birch looking
S. of W, in N.E. $\frac{1}{4}$ sec. 11-79-39
Aug. 25, 1913

Photos ~~7, 10~~, + 15, 16. Fine row
of honey locusts on left (C) &
of willows on right (W), looking
S. - On S. line Sec. 14 8 & 14
rec. 14 - 79 - 38, Aug. 24, 1913

Photos 23x, 24x. "Lincoln Park"
H. A. Escher's place on E. side of
rec. 19 - 79 - 39,



Ken White

2800 4th st

Reston

John Sandham
Dr. J. A. Cobb

John - Feb. 26, 1871

May 5 - 1847 Mary

Oct. 21 - 1858 Will

Oct. 24 - Vesta

Aug 8 - 1864 Anna

" 6 - 1874 - Jim

" 7 - Oregon

Sep. 26 - 1880 - Emma

May 14 - Jim Sr

Dec 27, 1912 - Mary (Emm's)

Ella - July 8, 1887

Bertha - May 5 - 1889

Anna - Mar. 22 - 1893

Vesta - Oct. 24 - 1896

Frank - June 17 - 1900

J. P. Miller Anteroian Well
Chicago

And All

2393 ft. 9 in

21 0 5
288

Frank a course
daily rock (limestone)

